

Wells GRH SS3624

REMEDIAL ACTION COMPLETION REPORT DEBRIS, SLUDGE, AND MIXED-CONTAMINANT SOIL REMOVAL

APPENDIX V
CLP DATA Packages



SDMS DocID

553624

VOLUME 1 Compliance Sample Validation Sample Delivery Group 18, Soil

Wildwood Property
Wells G & H Superfund Site
Woburn, MA

Prepared For:

BEATRICE COMPANY

Prepared By:

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9 Pond Lane
Concord, MA 01742

RETEC Project No.: 3-0947-730

MARCH 1995



Compliance Sampling Validation

RETEC performed a remedial action at the Wells G & H Superfund site involving the removal and disposal of construction debris, debris soil, and sludge material. Samples were collected to determine compliance with the mandated clean-up levels for criteria site pollutants. Approximately ten percent of the total number of samples collected during the remedial action were analyzed for the target analyte (TAL) and target criteria (TCL) listed compounds presented in the U.S. EPA Contract Laboratory Program (CLP).

Samples selected for criteria, TAL, and TCL pollutants were analyzed following U.S. EPA CLP protocols. Volatile organics were analyzed by purge and trap using gas chromatography equipped with a mass spectrum detector (GC/MS). The method was modified to satisfy the low detection limits required by the project. The modification consisted of lowering the calibration range from 10-200 micrograms per liter (μ g/l) to 1.0-25 μ g/l. Semi-volatile organics were analyzed using GC/MS techniques, with gel permeation column (GPC) clean-up practices. The method was also modified to extend the contract required detection limit down to 30 micrograms per kilogram (μ g/Kg). Pesticides and PCBs were prepared and analyzed using GC and electron capture detection (GC/ECD) techniques with GPC clean-up practices. All methods discussed in this paragraph followed the requirements specified in: U.S. EPA CLP Statement of Work, Document #OLM01.2, 1/91.

Selected metal analyses for criteria and TAL pollutants followed the methodology presented the U.S. EPA document: *CLP Statement of Work for Inorganic Analysis, document #ILM03.0 1/93*.

Final data was validated for accuracy by reviewing quality control procedures contained in each applicable method used. Quality control practices reviewed included:

- sample holding times;
- initial instrument calibrations;
- continuing instrument calibrations;
- surrogate compound recoveries;
- internal and external standard performance;
- field sample duplicates;
- trip and field blank results;
- method blank results; and
- matrix spike and matrix spike duplicates.

Sample results that were found to be out of quality control limits, for the referenced practices, were qualified following the procedures detailed in the U.S EPA Region I document: Laboratory Data Validation - Functional Guidelines for Evaluating Organic (11/01/88) and Inorganic Analyses (2/01/89).

As part of the validation process, data are qualified using letter codes, which have specific meanings notifying the data user that some data have additional uncertainties. The data reviewer can use the following qualifiers:

- U = The material was analyzed for, but not detected;
- J = The associated numerical value is an estimated quantity;
- R = The data are unusable, re-sampling and re-analysis is necessary for verification;
- UJ = The material was analyzed for, but not detected. The sample quantitation limit is an estimated quantity;
- B = The *organic* analyte is present in the associated blank as well as in the sample; and
- B = The associated *inorganic* numerical value is between the contract required detection limit and the method detection limit.

At the present time, data are qualified in three ways: as unusable; estimated; or presumptively present. When data are rejected, it doesn't mean that the analyte was not there, it means that the analytical test was not valid. Unusable data are flagged with an "R". Reasons for rejecting data are low surrogate recoveries, gross accedence of holding times, or poor calibration. When data are flagged as estimated, "J", it means that the data should be used with caution. The data could be significantly imprecise and that the reported value is an estimated value.

Compounds detected in blank samples can be used to qualify detected values in associated field samples as non-detect (U), if it meets the following criteria:

• the sample concentration is less than 10x the concentration of a detected common organic laboratory contaminant, i.e., acetone, methylene chloride, 2-butanone, or 2-bis(ethylhexyl)phthalate, or

• the sample concentration is less than 5x the concentration of the remaining field constituents in a blank.

Presented below are the validated results for samples analyzed during the remedial program conducted at the Wells G & H Superfund site in Woburn, Massachusetts.

Samples were analyzed by New England Testing Laboratory in Providence, Rhode Island. The data received was acceptable. However, on November 3, 1994, several files on the GC/MS volatile organic analysis run were lost. A routine back-up of the files by the laboratory found many of them to be damaged. Attempts made to recover the data failed. No sample files were lost, but quality control samples such as tuning standards, calibration checks and method blanks were. For the most part, critical output records were available in hard copy form for the data gaps. The hard copy forms allowed for the proper validation of the data.

Samples from the site contained high levels of pesticides. Many of the samples saturated the GC detector, nullifying initial analytical runs. However, in the interest of determining PCBs to EPA reporting requirements, all pesticide samples were analyzed at 1x dilution, prior to dilution for pesticide quantitation.

Attachment A to this memorandum contains all validation work sheets and calculations.

Volatile Organic Compounds

SAMPLE CO	DF.

COMMENT

Field Blank -8/30

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.

SL-04

Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.

SL-06/07

Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.

SL-08

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.

SL-08MS/MSD

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.

Field Blank - 10/4

Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.

1C-DL

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results. Reject (R) xylene concentration for eluting past calibration curve concentration.

1D-DL

Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

2A-DL

Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

2D

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify toluene concentration as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

4C	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
С	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Н	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
X	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
D-DL	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Field Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Trip Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
DP-7DL	Qualify trichloroethene as estimated (J) for poor MS/MSD results.

Semi-Volatile Organics

SAMPLE CODE

COMMENT

Field Blank-8/30	Qualify 4-chloroamiline, 3-nitroaniline, 2,4-dinirtophenol, and 3,3-dichlorobenzidine as estimated (UJ) for poor relative standard deviation on the initial calibration curve.
SL-01	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-01RE.
SL-03	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-03RE.
SL-04	Qualify all compound quantified by the internal standards chrysene- d_{12} and perylene- d_{12} as estimated (UJ) for failed internal standard area values.
SL-04RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-04.
SL-6/7	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-08	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-08RE.
SL-08RE	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-12	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-12RE.
SL-13RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-13.

SL-14RE

Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-14.

SL-15RE

Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-15.

SL-25RE

Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-25.

Field Blank-10/4

Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-butylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

1**A**

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

1B

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

1C

Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

1**D**

Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial

and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

2A

Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

2D

Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

2E

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

2F

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

3**A**

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

3B

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

4A

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

4B	

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

4C

Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

5A

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

5B

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

C

Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.

D

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

G

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

H

Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.

SL-20

Qualify indeno(1,2,3-cd)pyrene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

X

Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

Pesticides and PCBs

SAMPLE CODE

COMMENT

Field Blank - 8/30

Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify beta-BHC, endrin, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin, 4,4-DDT, and methoxychlor for continuing calibration failure.

SL-05DL

Qualify 4,4-DDT as estimated (J) for failing the relative standard deviation on the initial calibration curve and the percent difference on the performance evaluation mixture.

SL-6/7

Qualify alpha-BHC, delta-BHC, gamma-BHC, dieldrin, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, methoxychlor, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone,

	continuing calibration failure.
SL-08DL	Qualify 4,4-DDT as estimated (UJ) for failing the relative standard deviation on the initial calibration.
SL-08B	Qualify alpha-BHC, delta-BHC, dieldrin, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration.
SL-08BDL	Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, beta-BHC, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone, endosulfan sulfate, heptachloroepoxide, 4,4-DDE, endrin aldehyde, and endosulfan II as estimated (UJ) for continuing calibration failure.
SL-10/11	Qualify 4,4-DDT as estimated (J) for failing surrogate recovery limits.
SL-12	Qualify arochlor 1260 as estimated (J) for failing surrogate recovery limits.
SL-12DL	Qualify alpha-chlordane as estimated (J) for failing TCX surrogate recovery times.
SL-13	Qualify alpha-chlordane and gamma-chlordane as estimated (J) for continuing calibration failure.
SL-15	Qualify 4,4-DDT as an estimated value (J) for failing surrogate recovery limits. Qualify alpha and gamma chlordane as estimated (J) values for failing continuing calibration requirements.
SL-25DL	Qualify alpha-chlordane and arochlor 1260 as estimated (J) values for poor TCX and PCB surrogate retention times.

endosulfan sulfate II, and endosulfan II as estimated (UJ) for

Field Blank - 10/5	Qualify all compounds as estimated (UJ) for failing surrogate recovery limits.
A	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
BDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
CDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.
Е	Correct typos on form I: alpha chlordane should be 1.7 ug/Kg JP. Gamma-chlordane should be 1.9 ug/Kg P.
HDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
XDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
15a-1	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.
15a-2	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.
Inorganics	
SAMPLE CODE	COMMENT
1C	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron and magnesium as estimated (J) for failed serial dilution analysis on the ICP.

1D	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganese, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
2A	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganese, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
2D	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
4C	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
A	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
В	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
C	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.
G	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
H	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.

SL-2	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-17/18	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-19	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-20	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
X	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.

Attachment A

Validation Forms

RELEC

TO:

Jamie Greacen

FROM:

Richard Roat

DATE:

January 27, 1995

SUBJECT:

Validation of Analytical Results of Samples Collected During the Soil and Debris

Revise to report format, Title Compliance Sampling Validation"

Remedial Event at the Wells G & H Superfund site, Woburn, Massachusetts.

RETEC performed a remedial action at the Wells G & H Superfund site involving the removal and disposal of construction debris, debris soil, and sludge material. Samples were collected to determine compliance with the mandated clean-up levels for criteria site pollutants. Approximately ten percent of the total number of samples collected during the remedial action were analyzed for the target analyte (TAL) and target criteria (TCL) listed compounds presented in the U.S. EPA Contract Laboratory Program (CLP).

Samples selected for criteria, TAL, and TCL pollutants were analyzed following U.S. EPA CLP protocols. Volatile organics were analyzed by purge and trap using gas chromatography equipped with a mass spectrum detector (GC/MS). The method was modified to satisfy the low detection limits required by the project. The modification consisted of lowering the calibration range from 10-200 micrograms per liter (ag/l) to 1.0-25 ag/l. Semi-volatile organics were analyzed using GC/MS techniques, with gel permeation column (GPC) clean-up practices. The method was also modified to extend the contract required detection limit down to 30 micrograms per kilogram (ag/Kg). Pesticides and PCBs were prepared and analyzed using GC and electron capture detection (GC/ECD) techniques with GPC clean-up practices. All methods discussed in this paragraph followed the requirements specified in: U.S. EPA CLP Statement of Work, Document #OLM01.2, 1/91.

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- sample holding times;
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- trip and field blank results;
- method blank results; and
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- J = The associated numerical value is an estimated quantity;
- R = The data are unusable, re-sampling and re-analysis is necessary for verification;
- UJ = The material was analyzed for, but not detected. The sample quantitation limit is an estimated quantity;
- B = The *organic* analyte is present in the associated blank as well as in the sample; and
- B = The associated *inorganic* numerical value is between the contract required detection limit and the method detection limit.

At the present time, data are qualified in three ways: as unusable; estimated; or presumptively present. When data are rejected, it doesn't mean that the analyte was not there, it means that the analytical test was not valid. Unusable data are flagged with an "R". Reasons for rejecting data are low surrogate recoveries, gross accedence of holding times, or poor calibration. When data are flagged as estimated, "J", it means that the data should be used with caution. The data could be significantly imprecise and that the reported value is an estimated value.

Compounds detected in blank samples can be used to qualify detected values in associated field samples as non-detect (U), if it meets the following criteria:

- the sample concentration is less than 10x the concentration of a detected common organic laboratory contaminant, i.e., acetone, methylene chloride, 2-butanone, or 2-bis(ethylhexyl)phthalate, or
- the sample concentration is less than 5x the concentration of the remaining field constituents in a blank.

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Samples from the site contained high levels of pesticides. Many of the samples saturated the GC detector, nullifying initial analytical runs. However, in the interest of determining PCBs to elient specific reporting requirements, all pesticide samples were analyzed at 1x dilution, prior to dilution for pesticide quantitation.

COMMENT

Qualify methylene chloride and acetone concentrations as non-detect

Attachment A to this memorandum contains all validation work sheets and calculations.

Volatile Organic Compounds

SAMPLE CODE

SL-08MS/MSD

Field Blank -8/30	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-04	Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-06/07	Qualify methylene chloride, acetone, a 2-butanone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.
SL-08	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination.

(U) for method blank contamination.

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Qualify methylene chloride and acetone concentrations as estimated (J) for poor initial calibration results.

1C-DL

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results. Reject (R) xylene concentration for eluting past calibration curve concentration.

1D-DL

Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

2A-DL

Qualify methylene chloride and acetone concentrations as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

2D

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify toluene concentration as non-detect (U) for field blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

4C

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

C

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

Η

Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.

X	Qualify methylene chloride and acetone concentrations as non-detect (U) for method blank contamination. Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
D-DL	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Field Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
Trip Blank - 10/14	Qualify methylene chloride and acetone concentrations as estimated (J) for poor continuing calibration results.
DP-7DL	Qualify trichloroethene as estimated (J) for poor MS/MSD results.

Semi-Volatile Organics

SAMPLE CODE	COMMENT
Field Blank-8/30	Qualify 4-chloroamiline, 3-nitroaniline, 2,4-dinirtophenol, and 3,3-dichlorobenzidine as estimated (UJ) for poor relative standard deviation on the initial calibration curve.
SL-01	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-01RE.
SL-03	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-03RE.
SL-04	Qualify all compound quantified by the internal standards chrysene- d_{12} and perylene- d_{12} as estimated (UJ) for failed internal standard area values.
SL-04RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-04.
SL-6/7	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.
SL-08	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-08RE.

SL-08RE	Qualify bis(2-ethylhexyl)phthalate and di-n-butylphthalate as non-detect (U) for method blank contamination.			
SL-12	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-12RE.			
SL-13RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-13.			
SL-14RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-14.			
SL-15RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-15.			
SL-25RE	Do not use. Failed internal standard area values. Use compounds quantified under sample code SL-25.			
Field Blank-10/4	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-butylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.			
1A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.			
1B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.			

1C	Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol,
	pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
1D .	Qualify 4-chloroanailine, hexachlorobutadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol, carbazole, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
2A	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

rophenol, e percent on check. hod blank

Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

Oualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

2E

2F

3A

3B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
4C	Qualify 2-nitrophenol, 4-chloroanailine, 3-nitroaniline, 2,4-dinitrophenol, 4-nitrophenol, 4-nitroaniline, pentachlorophenol, carbazole, and di-n-octylphthalate as estimated (UJ) for failing the percent difference between the initial and continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.
5A	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
5B	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
C	Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.
D	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.
G	Qualify indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

Η

Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate and bis(2-ethylhexyl)phthalate as non-detect (U) for method blank contamination.

SL-20

Qualify indeno(1,2,3-cd)pyrene as estimated (UJ) for failing the percent difference between the initial and continuing calibration check.

X

Qualify 3-nitroaniline and 4-chloroaniline as estimated (UJ) for failing the relative standard deviation on the initial calibration curve and the percent difference on the continuing calibration check. Qualify di-n-butylphthalate as non-detect (U) for method blank contamination.

Pesticides and PCBs

SAMPLE CODE

COMMENT

Field Blank - 8/30

Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify beta-BHC, endrin, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin, 4,4-DDT, and methoxychlor for continuing calibration failure.

SL-05DL

Qualify 4,4-DDT as estimated (J) for failing the relative standard deviation on the initial calibration curve and the percent difference on the performance evaluation mixture.

SL-6/7

Qualify alpha-BHC, delta-BHC, gamma-BHC, dieldrin, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, methoxychlor, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone, endosulfan sulfate II, and endosulfan II as estimated (UJ) for continuing calibration failure.

SL-08DL

Qualify 4,4-DDT as estimated (UJ) for failing the relative standard deviation on the initial calibration.

SL-08B	Qualify alpha-BHC, delta-BHC, dieldrin, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration.		
SL-08BDL	Qualify alpha-BHC, delta-BHC, 4,4-DDT, and methoxychlor as estimated (UJ) for failing the relative standard deviation on the initial calibration. Qualify endrin, beta-BHC, and 4,4-DDT as estimated (UJ) for failing the percent difference on the performance evaluation mixture. Qualify endrin ketone, endosulfan sulfate, heptachloroepoxide, 4,4-DDE, endrin aldehyde, and endosulfan II as estimated (UJ) for continuing calibration failure.		
SL-10/11	Qualify 4,4-DDT as estimated (J) for failing surrogate recovery limits.		
SL-12	Qualify arochlor 1260 as estimated (J) for failing surrogate recovery limits.		
SL-12DL	Qualify alpha-chlordane as estimated (J) for failing TCX surrogate recovery times.		
SL-13	Qualify alpha-chlordane and gamma-chlordane as estimated (J) for continuing calibration failure.		
SL-15	Qualify 4,4-DDT as an estimated value (J) for failing surrogate recovery limits. Qualify alpha and gamma chlordane as estimated (J) values for failing continuing calibration requirements.		
SL-25DL	Qualify alpha-chlordane and arochlor 1260 as estimated (J) values for poor TCX and PCB surrogate retention times.		
Field Blank - 10/5	Qualify all compounds as estimated (UJ) for failing surrogate recovery limits.		
A	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.		
BDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.		
CDL	Qualify 4,4-DDT as an estimated value (J) for failing the relative standard deviation for the initial calibration curve.		

E	Correct typos on form I: alpha chlordane should be 1.7 ug/Kg JP. Gamma-chlordane should be 1.9 ug/Kg P.
HDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
XDL	Qualify all detected compounds as estimated values for failing the percent difference for field sample duplicates.
15a-1	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.
15a-2	Qualify aroclors 1254 and 1260 as estimated values (J) for poor field duplicate precision.
Inorganics	
Inorganics SAMPLE CODE	COMMENT
· ·	COMMENT Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron and magnesium as estimated (J) for failed serial dilution analysis on the ICP.
SAMPLE CODE	Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron and magnesium as estimated (J)

Qualify antimony as estimated (J) for failing matrix spike recovery.

Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as

estimated (J) for failed serial dilution analysis on the ICP.

Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.

Qualify antimony as estimated (J) for failing matrix spike recovery. Qualify lead as estimated (J) for failing the percent difference on the duplicate injection. Qualify iron, manganse, and magnesium as estimated (J) for failed serial dilution analysis on the ICP.

11

2D

4C

A	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
В	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
С	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.
G	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
Н	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.
SL-2	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-17/18	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-19	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
SL-20	Qualify lead as an estimated value (J) for failing the matrix spike and duplicate injection precision limits.
X	Qualify antimony, chromium, copper, and lead as estimated (J) for failing matrix spike recovery limits. Qualify copper, iron, and lead as estimated (J) for failing duplicate precision requirements.

Attachment A

Validation Forms

REVIEW OF ORGANIC CONTRACT LABORATORY PACKAGE

Site Name: Wells G & H Superfund Site

Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: NETL 18 SAS No.:

SAS No.: Sample Dates: 8/30 + 9/8/94Matrix: soil Shipping Date: 8/30 + 9/8/94

No. of Samples: 16

SDG No.: 18

Date Rec'd by Lab: 8/31 + 9/9/94

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness

- Matrix Spike/Matrix Spike Dup.

- Holding Times

- Field Duplicates

- GC/MS Tuning

- Internal Std Performance

- Calibrations

- Pest. Inst. Performance

- Blanks

- Compound Identification

- Surrogate Recoveries

- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.

J = Approximate data due to quality control criteria.

R = Reject data due to quality control criteria.

U = Compound not detected.

UJ = Compound detection limit is approximate

Reviewer:

Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received:

Data package complete

II. HOLDING TIMES:

		VOA	BN	VA.	Pe	st.
Sample ID	Date Sampled	Date Anal.	Date Extr.	Date Anal.	Date Extr.	Date Anal.
FB	8/30/94	9/07/94	9/01/94	9/05/94	9/01/94	9/13/94
SL-01	8/30/94	9/02/94	9/01/94	9/06/94	8/31/94	9/06/94
SL03A	8/30/94	9/02/94	9/01/94	9/08/94	8/31/94	9/05/94
SL-03B	8/30/94	9/02/94				
SL-04	8/30/94	9/04/94	9/01/94	9/05/94	8/31/94	9/05/94
SL-05	8/30/94	9/07/94	9/01/94	9/09/94	8/31/94	9/05/94
SL-6/7	8/30/94	9/04/94	9/01/94	9/06/94	8/31/94	9/06/94
SL-08	8/30/94	9/04/94	9/01/94	9/06/94	8/31/94	9/06/94
SL-10/11	8/30/94	9/02/94	9/01/94	9/09/94	8/31/94	9/06/94
SL-12	8/30/94	9/02/94	9/01/94	9/06/94	8/31/94	9/13/94
SL-13	8/30/94	9/02/94	9/01/94	9/08/94	8/31/94	9/13/94
SL-14	8/30/94	9/07/94	9/01/94	9/08/94	8/31/94	9/06/94
SL-15	8/30/94	9/02/94	9/01/94	9/08/94	8/31/94	9/13/94
SL-25	8/30/94	9/02/94	9/01/94	9/08/94	8/31/94	9/13/94
TB	8/30/94	9/07/94				

VOA: • Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.

• Preserved: Both within 14 days of sample collection.

Soils: Both within 10 days of sample collection.

BNA & Pest:

Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III.	GC/MS	TUNING	(Form	5B)
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The DFTPP performance results for semi-volatile analysis were reviewed and found to be within the specified criteria (page D-40/SV). If no, samples affected: Tuning passed all SVOC QC criteria Calculations: The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A. If no, samples affected: Tuning passed all VOC criteria Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: 8/30 + 8/31/94

Dates of Continuing Calibration: 9/02, 9/04 + 9/07/94

Instrument ID: MACH 1 Matrix/Level: Soil/low

<u>Date</u>	Criteria Out RF, %RSD, %D	Compound (value)
8/30	RSD	methylene chloride (35.1) acetone (69.9) 2-butanone (37)
8/31	RSD	methylene chloride (33) acetone (71)
9/02	D	methylene chloride (288) acetone (352) 2-butanone (56) 2-hexanone (29)
9/04	D	methylene chloride (78.1) acetone (125)
9/7	D	methylene chloride (456) acetone (202)

Calculations:

Initial calibration uses 5 concentrations. All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA). All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: 9/5/94

Dates of Continuing Calibration: 9/5, 9/5, 9/9 + 9/13/94

Instrument ID:

Matrix/Level: Soil/low

<u>Date</u>	Criteria Out RF, %RSD, %D	Compound (value)
9/5	RF RSD	2,4-dinitrophenol (0.03) 4-chloroaniline (43) 3-nitroaniline (66) 2,4-dinitrophenol (38) 3,3-dichlorobenzidine (35)
	D	2,4-dinitrophenol (28)
9/13	. D	indeno(1,2,3-cd)pyrene (26) 2-fluorobiphenyl (29)

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV. All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50% All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

<u>Date</u>	<u>Lab ID</u>	<u>Matrix</u>	<u>Compound</u> <u>C</u>	Concentration
	VBLK02	soil	methylene chloride acetone	5.6 ug/Kg 6.3
			2-butanone	<i>13.1</i>
			boric acid (TIC)	7.7
	VBLK03	soil	methylene chloride	1.5
			acetone	1.3
			hexane	4.4
	SBLKS1	soil	di-n-butylphthalate	22
			bis(2-ethylhexyl)phtha	late 28

Equipment and Field Blanks:

<u>Date</u>	<u>Lab ID</u>	<u>Matrix</u>	<u>Compound</u>	Concentration
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No contamination

If concentration < CRQL, report CRQL
If concentration > CRQL, but less than action level (5x or 10x), report as (U)

If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

VOA

B/N

<u>Samples</u>

TOL BFB DCF

NBZ FBP TPH PHL 2FP TBP

Pass criteria

Pass criteria

Calculations:

	Water	<u>Soil</u>	
$TOL = Toluene-d_8$	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
$DCF = 1,2 Dichloroethane-d_8$	76-114	70-121	
$NBZ = Nitrobenzene-d_5$	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d ₁₄	33-141	18-137	
PHL.2FP.TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: soil

Sample Nos.: SL-25 and SL-12

List compounds that do not meet the following RPD criteria:

- An RPD of < 30% for water
- An RPD of < 50% for soil

<u>Fraction</u>	Compound	Sample Conc.	Dup Conc.	<u>RPD</u>
VOCs passed criteria				
SVOC	benzo(a)anthracene	310	117	90
	chrysene	644	533	19
	benzo(b)fluoranthene	482	473	2
	benzo(k)fluoranthene	206	182	12
	benzo(a)pyrene	326	234	33
	indeno(1,2,3-cd)pyrene	180	154	16

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID Date

I.S. Out

I.S. Area/RT

Acceptable Range Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J) Non-detects are flagged with (UJ) Page D-43, 51/SV Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

<u>Date</u>

Sample No.

Compound

%REC

Limit

VOC passed criteria

SVOC passed criteria

If any recoveries <10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID

Date/Time

RT

Samples Affected

Actions

4,4-DDT retention times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound

Date/Time

<u>RT</u>

RT Window

Samples Affected

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID DDT or Endrin % Breakdown Samples Affected

PEMO5 endrin 50.7 DB1701 column - non affected

Calculations:

If breakdown > 20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown > 20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

Column 1

Column 2

Samples

TCX DCB

TCX DCB

Surrogate recoveries passed criteria

Calculations:

OC Limits

TCX = Tetrachloro-m-xylene

DCB = Decachlorobiphenyl

60-150 60-150

XII. PESTICIDE CALIBRATION (Form 6E)

Initial Calibration: Must be calibrated with 3 conc. Calibration factors on page D-41/pest.

RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD < 10% or 15%

<u>Date</u>	Compound	Mean	%RSD	Column	Samples Affected
	alpha-BHC		23	DB1701	
	alpha-BHC		27	DB608	
	delta-BHC		24	DB608	
	gamma-BHC		21	DB608	
	dieldrin		21	DB608	
	4,4-DDT		34	DB608	
	methoxychlor		25	DB608	

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of <15% on quantitation or 20% on confirmation for continuing calibration.

<u>Date</u>	Compound	<u>%D</u>	Column	Sample Affected
	endosulfan	44	DB1701	INDBM02
	endrin aldehyde	<i>30</i>	DB1701	n
	endosulfan II	33	DB1701	INDBM03
	endosulfan sulfate	37	DB1701	n .
	endrin aldehyde	48	DB1701	"
	endrin	52	DB1701	INDAM04
	decachlorobiphenyl	48	DB1701	INDBM04
	decachlorobiphenyl	36	DB608	INDBM02
	endosulfan sulfate I	I 27	DB608	INDBM03
	endosulfan II	27	DB608	"
	endrin ketone	33	DB608	n n
	endrin	29	DB608	INDAM04
	4,4-DDT	<i>50</i>	DB608	n .
	methoxychlor	31	DB608	"
	delta-BHC	32	DB608	INDBM04
	hepachloroepoxide	26	DB608	"
	4,4-DDE	26	DB608	"
	endosulfan II	37	DB608	"
	endosulfan sulfate	42	DB608	n
	endrin ketone	56	DB608	"
	endrin aldehyde	32	DB608	n
	alpha-chlordane	37	DB608	n
	gamma-chlordane	49	DB608	n

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

<u>Date</u>	Sample No.	Compound	%REC
	florisil	endosulfan I	72
		dieldrin	<i>54</i>
		<i>4,4-DDT</i>	<i>51</i>
		methoxychlor	0
		decachlorobiphenyl	36
	GPC	4,4-DDT	<i>72</i>

QC Limits on florisil %REC = 80-120% QC Limits on GPC %REC = 80-110% If %REC < 80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Distri	Camania Ma	Compound	%REC	<u>Limit</u>
<u>Date</u>	Sample No.	Compound	70 NLC	LIIIII

SL-08B failed all criteria for matrix spike and matrix spike duplicate. High technical chlordane in sample contributed to matrix interferences. Chlordane levels were above added spiked concentrations.

XVI.	SAMPLE (QUANTIT	ATION
VOA:			
BNA:			

PEST/PCB:

method blank VBLKOL = ND

VBLK02

mc = 5.6

2. Detainer = 13.1

Actone - 6.3

Boril ALID 7.7 (291 RT)

VBLKO3 MC - 1.5

Hexrine 4.4 (4.42 CT)

Actore - 13

SBLKSI Di-n-bitylphthatte 225 bis (z-ethyl hexyl) phthalate 285

magates - Ne mois

CALCULATIONS: SLOT

TOWERED = 194.41 % (Memberce = 1510)

= 52.21 ca/L × 100 = 104.42 %

SL-05

Bromoflourobenzene = 86,44%

chlorbenzene = 15TD

Interned STDS VOAS No 7420,2 Initial calibrations 0 8/30/94 1256 HRS instrument = 5972 RRfs > 0.05 RSDs > 25% RSDs > 25= incthe/ene chloride = 25.1 CAlcs - 12RFX ok RSDs ok aceton = 69.9 2-butanone = 37 Ecritare 884, = 0.949 81997 x 570 5/L = 0.949. -432032 x 1.0 5/L chloroforn 22=5 = 4.034 197056 x 5.0 mg/L = 4.034 @ 8/31 1407 MACH-01 RRFS > 0.05 RSDs > 25 = acetone @ 7/ nutheline C. @ 33 Colles X RRB = OK + RSDS Tolvene REF5 = 1.208 72836 x 50 mg/L = 1,208 768707 x 5 mg/L

ccals 9/2 @ 14:07 hrs

27.53 70.05 90D > 2580 = metheme chloritle 288 auton 352 2-betanone 56 2 hexanone 29

REF 50 trichlaroethere = 0.380

284051 50 m/L = 0.380

747286 50 m/L = 0.380

CCal 9/4 1407 hrs

PRES > 0.05

YOD > 25% = methylene chloride 78/
crutone 1246

1,2 - Dichloro ethane = 0.921

RZF50 230348 x 50 = 0.971

237297 x 50

ccal 9/7 1256 hrs

PRFS > 0.05 % 0D > 35% methylene Chlonle = 456% accelone = 202

22500 Tolvene 1399

 $\frac{325880}{232994} = 1.3986$

Tuning every 12 425

(ost to Date 2724,24 507.54 1638,59

SVOA Sumques 3/N SL-01 Acis SL-04 Terphenyldin = 111 %

$$5L-01$$
 1.2-Dichlorbenzenedy $\frac{81612}{51875} \times \frac{20091L}{984} = \frac{31.97 \times 91L}{50} \times 100 = 649$

Internal Stas

No TYPOS

I CALS. 9/5/94 1150 hrzs

> 88FS 70.05 PSDS 4 30 %

24-Divitophend 0.03

4-Chloroaniline 42.5

3-nitroaniline 66.2

2,4-Divito phenol 37.5

3,3-Dichlorobenzidine 35.1

40 RSD COL OK PREF OK

RRF80 Chingsone - 0.940

CAREN Partora Jones

CLAL 9/5/94 @ 1150 hrs	****
RRFS 70.05 90DS 625-10	
RRF50 Naphthalene = 0.932 292552 x 20 5/L = 0.9	32_
40.Ds oh	
CCAL 9/5/94 @ 2333 hrs	
215,5005 9005 / 2570 2,4-Dinhoptono) 27.6%	
ERFSD Nitrobeniene 0.388	
131070 x 20 yol - C. 388	
90 De on	
RRF50 > 0.05 (00), >25 = indeno(1,2,3-Ld)pyrzene	
22F50 Chrysone = 62391 x 20 vg/L = 876 56923 x 25 vs/L	
Reported 0.877	ř
1250 ±ndeno(123cd)pyrene = 0.803 57255 x 20 0.803	
後の表現の のでは、	

ccm 9/13 @ 1723 hrs

RRF50 > 0.05 % D > 25% = Indeno (123 cd) pyrene 26 % 2 Fluoro 5, pheny 1 29 %

2- Fluorobiphony = 1.182

57656 × 20 mg/L - 1.1919 39027 × 25 mg/L

Tuning

DFTPP

@ 9/5/24 11:24 hes

ME 441 = 76.75

9.656 × 100 = 76.75

	SDG 18-1 NETT WELLS G+14
	Pestraides
SUNOGE	wes .
SL-	6/7 TCX-1 = 91
Somo	167815 x 900 W. x 2 -4pc - 12.45 ylkg 2305425 x 2 M x 35.2 83
420EUS	$\frac{2 \text{ ml} \times 0.2}{(35.2)(.93)} = 13.7 \text{ mg/kg}$
	12.45 v5/kg/13.7 mg/kg x100 = 90.890
SL-14	DCB2 = 140%
FOUND	207195 x 5,000 M x 2 GPC - 19.32 vg/kg 1844075 x 35g x 181 x 2 ml
SECRA	> 2 ml x 0.2 x1000 = 14.11 35g x .81
	19.82/NII X100 - 140 4 %

Percent resolution Form 64
Resolutions > 60%
ENDRIN DOT Breakdown
74805 - MNR
PEMOZ 9/5/94 DB1701
44 DDT = 7.67%
DOD = 17072/1348237.50 = 0.01266
0.01266 0.165 ng x166 = 7.67%
% D > 25 °lo
DEPTOI PEMOZ enlyin 27%, methoxychlor 26
" PEMO3 beta-bHC 41, endrin 31
methoxychlon 26.
13608 PEMEZ 4,4-007 39
PEMO3 44-00T 41
PEMOH beta-BHC 29 endrin 44 :400T 80
PEMOS beta BHC 36 4400T 89
Pernos endrin breakdown 50.7 combind = 52.7
Endrin Kutone 19470/901637.50 = 0.0216 Endrin Aldehyde 29899/877737.5 = 0.0329
0.0545 0.107 x 100 = 50.95 %

OI IN	38M02	endosultan 44
		endrin aldehighe 30
OI INT	DRW03	Endosulfan 11 33
		endosulfan sulfate 37
		endrin aldehyde 48
OL IND	YOMA	Endrin 52
エト	0804	decach lorob, phenyl 48
		<u> </u>
B608	INDBM02	decahiorobishing 36
23 608	INDIBMOS	endosulfan Sulfate 11 27
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		rugnin hetone 33
B60 0	+OMAZINI	endrin 29
)		02 TQQ- P P
		methoxychlor 31
	FOMERUT	deta -BHC 32
		Heptachlorepoxide 26
		4,4-DOE 26
	· .	endosulfan 11 37 endosulfan Sulfate 42
		rndrin kitone 56 rndrin aldehyde 32
		The change 37
		gamma chloridane 41
		Jamma Chilonana (1
	And the second s	
	·	

Avalytical Sequence	FORM 8D	- ok	
Florisil Clean-up	Endosulfan 1 Dieldnn	72% 54%	FORM 9A
	y,4-ppt methoxychlor Decachlorobip	51% 0%	0
4,4-DDT = 51%			
Recovered	31141. :	0.020 ng/	2 ml = 0.01022 x
10.22 ng/ml/20	rg/ml =49%	rocal -	10.22 ng/ml
GPC Check Fr	DRW 98		
4,4-DDI	- 72%		
RecoverED	217924/152341	2.5 = 0.7	43 ng
	0.143 ng/2 ml	× 1000 =	71.5 ng/ml
added 100	71.5 ng/ml/100	ng/ml x 100	- 71.5 %
		A A A A A	

FB		16 %	·
		300%	
SLOI	Camma Chlorolane	179	
	4,4-DDT		
SLO 3DL	alpha chlordanus	61	
	Arodon 1260 1	120	
SL-04	gamma chlordant	328	
		4	
	4,4-DDT 13	52	
	•	29	
SL05 PL			
	attha chlordane	95	
	4,4-000	319	
		\ ~~	
SL-10/7	opher-chlordane	\60	
	4,4-DDE	32	· · · · · · · · · · · · · · · · · · ·
	44-200	168	
SL-08	DL 4-400T	433	
SL-08	B gumma-chlada	ш 43	
	colpha chlordant	38	
		<u>,</u>	
SL-12			
	alpha chlordane		
	4,4-007	12.8	
	•		

SL-14DL	4,4-DDT 15' Aroclor 1260 7	9		·
	gamma delordane			
SL-15		225		
		399		
	4,4-DOT	<u> </u>		
SL-25DL	gammachbordne	62		
	alpha chlordane	40		
	4,4-DOT	95		
	Aroclar 1260	32_		
wethod blanks	- all Clean			
	vun after Secomple			
Field blank 44 DOT	30977 x 5000 x 8310625 1,000 ml	c2 - 0.18t	ey L	
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			both	7 (30	7	12021tive	-	
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				RiD	790	R U~		
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) <u></u>					:			
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B B VS	appear + duly BHL, YUDDT and methoxychlor
for	RSDs > 20 on Initial Calibration
5	but -BHC endrin and 44-DIDT for PEM > 25%
V 2	endrin 44 DAT + methogicalor for INDBO3 failure
Rem	it appear bamma chitordase for Pack Indontification Dellurice.
U	
SLOI	44-DOT 5 concentration for four Placerity GRE Llear
	No.
	Jy4-DDT + gamma-chlordand for Poor confuction
	Performes 1x run on Sample For PERS on one column
SLO3	tertornico IX 1011 on same 1212 la Prot
	1701, not run on 608. Dilutel sample for Pest.
	12 un Dilutud sample on 1701 + 608.
	RAN PCBS on 600 Later with out LLP Sequence.
	Oralitid with "Y"
SLOBOL	25 44 DOT GRE 2000 Foliast Correspondence
-	I AROCIOR 1240 For poor telent truspan
SL-04	5 44 DDF GOOD Flower GPC Chammers
	interferances present. I endouted + dieter
	BOOK PLOUSIL OPL XCVITS
SL05	Same 65 SL-03
SL-105 DL	+ 44-00 POOR INTELL COL 200 @ 34% PEM & H
	cl. 1 col 0 51 of
C1 - 6/4	UJ+J alpha, clelta+gamma BHC, dieldrin, 4,4-DDT+
<u> </u>	nuthoxehlor for foor + without CAL RSD > >20%
	5 DOT POOR PEM UT endrin + W ethoxychon Poor PEM UT endosulfan II, endrin Ketone for
	数量的使用的 使用的数据的 对数据数据的数据数据的证明数据的对应,如此实在这位的数据的知识,这一个人,一个人,一个人,一个人,一个人,一个人,一个人,一个人,一个人
	POR ENAMORE COM
	GPC

<u> </u>	Partial Listina!
SL-08DL	J 4,4-DOT POOR ICAL, Florist F GPC
SL-08B	full Listing! IT alpha toluta BHC, dieldrin + meThoxychlor poor icm
	UT Sita Bith endry + 44 DDT for DOOR PEM
SL-08BDL	for soor ICAL
	J haptachlomogrande 44 ODE Condesultan 11
	endosytan sulfate ender Netone envers aldalydle + gamma Chlordau poor ENDEMOY 15 condisation to decidaring processing the classes
SL-10(1)	T 44 DDT POOIZ Surrogates
SL-10/11 DL	OK
SL-12	I Aroclar 1260 poor surregules.
SL-120L	Jaipha-chlordane poor Tex surregule retention time
SL-13	Jalpha + gamma Chlordane 120012 INDBMOY JULIAN Pron Plannil , CAPC
SC-14	5 You plansing to CRC

SL-14 DL	~\/	<u>Carried State</u>				
SL-14B	ok	<u>.</u>				
SL-15	J	20 44	T Poor	sunogat	es , hor	+ Florial
		HEM			ine Poor	
SC-25	ok		· · · · · · · · · · · · · · · · · · ·			
SL-25DL		cylu-	chlordane	- Arodor	1260 pook	Tex rentent
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		1
B	Quality ML + actionone FOR MB CON family	ration
<u></u>	- at acalyly me autore 2 betanone poor cal	
51-01	ok	
SLO3A	ok	
SL-03B SL-04	U Quality ML, actions + MEK for MB Contarmi	nution
	T Quality ML, autone + : for poor ICAL	
SL-05	ok	
SL-06/7	U audity me action with for MB Contamina T availty me action for poor core	<u> 71 0V</u>
SL-08	1) Evality ML + actions for MB contamination	1
SL-08MS	msp Quality MC + actore for MB Contamination	
,		
SL-19/11 SL-12	ok oh	
SL-13		
	ok ok	
5L-25	ok	
<u> </u>	0K	

REVIEW OF INORGANIC CONTRACT LABORATORY PACKAGE

Case Number:

Site Name: Wells G & H Superfund Site

Laboratory: NETL

No. of Samples/Matrix: soil

SDG: 18

Reviewer: RETEC

SOW:

Reviewer's Name: R. Roat

Completion Date: 10/24/94

DATA ASSESSMENT SUMMARY

		<u>ICP</u>	<u>AA</u>	<u>Hg</u>	<u>Cyanide</u>
1.	Holding Times	О	О	О	О
2.	Calibrations	О	O	О	O
3.	Blanks	O	О	Ο	O
4.	ICS	O	О	O	O
5.	LCS	0	О	Ο	O
6.	Duplicate Analysis	О	О	O	O
7.	Matrix Spike	X	X	X	O
8.	Serial Dilution	O	О	-	-
9.	Overall Assessment	O	О	O	O

O = Data had no problems or qualified due to minor problems

Action Items:

M = Data qualified due to major problems

Z = Data unacceptable

X = Problems, but do not affect data

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide Analysis Date	Metal Analysis Date	Action
SL-6/7	8/30/94	9/21/94	9/07/94	9/06/94	
SL-04	8/30/94	9/21/94	9/07/94	9/06/94	
SL-08	8/30/94	9/21/94	9/07/94	9/06/94	
FB	8/30/94	9/21/94	9/07/94	9/06/94	
SL-10/11	8/30/94			9/06/94	
SL-25	8/30/94			9/06/94	
SL-14	8/30/94			9/06/94	
SL-03	8/30/94			9/06/94	
SL-15	8/30/94			9/06/94	
SL-12	8/30/94			9/06/94	
SL-13	8/30/94			9/06/94	
SL-01	8/30/94			9/06/94	
SL-05	8/30/94			9/06/94	

Metals - 180 days from collection preserved pH < 2 Mercury - 28 days from collection preserved pH < 2 Cyanide - 14 days from collection preserved pH > 12 If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

Date ICV/CCV Analyte %R Action Samples Affected

Passed all validation criteria

Action:

 Accept
 Estimate (J)
 Reject (R)

 Metals:
 90-110%
 75-89%, 111-125%
 <75%, >125%

 Mercury:
 80-120%
 65-79%, 121-135%
 <65%, >135%

 Cyanide:
 85-115%
 70-84%, 116-130%
 <70%, >130%

2. Analytical Sequence

- A. Did the laboratory use the proper number of standards for calibration as described in the SOW? Yes
- B. Were calibrations performed at the beginning of each analysis? Yes
- C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? Yes
- D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- > 0.995?

 Yes
- E. Was a standard at 2xCRDL analyzed for all ICP analysis? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. <u>Laboratory Blanks</u>

DATE

ICB/CCB

PREP BL

ANALYTE

CONC.

Passed all validation criteria

2. Equipment/Trip Blanks:

Not applicable to soils

DATE

EQUIP BL #

ANALYTE

CONC.

3. Frequency Requirements

- A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes
- B. Was a calibration blank run every 10 samples or every 2 hours? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: Passed validation criteria

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

- 1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.
- 2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

AL UNITS

ELEMENT MAX CONC.

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

		Percent Recovery		
	< 50%	50-79%	>120%	
Positive sample results	R	J	J	
Non-detected samples	R	UJ	Α	

<u>DATE</u> <u>ELEMENT</u> <u>%R</u> <u>ACTION</u> <u>SAMPLES AFFECTED</u>

Passed all validation criteria

2. Frequency Requirements

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? **Yes**

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT

CONC. DETECTED IN THE ICS

CONC. OF INTERFERENTS

IN THE ICS

AL CA FE MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE ELEMENT SAMPLE SAMP AFFECTED AFFECTED CONC. AL

SAMPLE INTERFERANT
AL CA FE MG

ESTIMATED INTERF.

Action:

^{1.} The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels*in the ICS solution.

^{2.} Estimate (J) positive results for affected elements for samples with levels of >50% or more.

^{3.} Reject (R) positive results if the reported concentration is due entirely to the interferant.

^{4.} Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: SL-08MS

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added SSR - spikes sample result SR - sample result

ANALYTE

SSR

SR

<u>S</u>

%R

ACTION

Passed validation criteria

Actions:

- 1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.
- 2. If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery		
	< 30%	<u>30-74%</u>	<u>> 125 %</u>
Positive Sample Results	J	J	J
Non-Detected Results	R	UJ	Α

2. Frequency Criteria

- A. Was a matrix spike prepared at the required frequency? Yes
- B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? *Not required*

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	<u>ACTION</u>
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury	0.5	15	11.6	25.5	none
Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide	0.5	33	26.5	21.5	none

Action:

^{1.} Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is > CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair.

<u>ELEMENT</u>	CRDL	SAMPLE #	DUPLICATE #	RPD	<u>ACTION</u>
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium	•				
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	0.5	229	161	35	none
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

^{1.} Estimate (J) positive results for elements which have a RPD >30% for water and >50% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE

ELEMENT

%R ACTION

SAMPLES AFFECTED

Passed all validation criteria

Action:

	Felcent Recovery		
	< 50%	<u>51-79%</u>	<u>>120%</u>
Positive Results	R	J	J
·Non-Detected Results	R	UJ	Α

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? Yes

IX. FURNACE AA ANALYSIS

- 1. <u>Duplicate Precision</u>
- \underline{X} Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +-20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. Post Digestion Spike Recoveries

 \underline{X} Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

- X MSA was used to quantitate analytical results when contractually required.
 - \underline{X} Correlation coefficients > 0.995, accept results Correlation coefficients < 0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.

2. If the sample absorbance is <50% of post digestion spike absorbance the following actions should be applied:

	< 10%	Percent Recovery 11-84%	<u>>115%</u>
Positive Result	J or R	Nì	J
Non-detected	R	ì	A

3. Estimate (J) sample result if MSA was required and not performed.

4. Estimate (J) sample result if correlation coefficient was < 0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

Serial dilutions were not performed for the following:

 \underline{X} Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT	<u>IDL</u>	50xIDL	SAMPLE #	DUPLICATE #	<u>%D</u>	<u>ACTION</u>
Aluminum						
Barium			110	127	15	none
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Nickel						
Potassium						
Silver						
Sodium						
Vanadium						
Zinc						

^{1.} Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1. <u>Instrument Detection Limits</u>

 \underline{X} Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. <u>Reporting Requirements</u>

- A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes?

 Yes
- B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? Yes
- C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

X Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.
Sample results were beyond the linear range/calibration range of the instrument for the following elements:
1. Sample Calculation:

ICP:

AA Furnace:

Mercury:

Cyanide:

Metals NETL 18-1 Sampled received 8/30 9/31 SL-67 SL - 04 56-08 SLOBB FB SL-12B LRAD SL-10/11 SL-143 SL - 25 56-14 Ws on 9/7/94 SL-03 Minum on 9/21 SL-15 SL-12 SL-13 SL-01 * Preside Desis Nova Bo ICH + F ICAL Tasses QC recours From Containing cc v fertermed every 2 hrs or 10 samples with LLB COLD VAPOR - POSSED OC Limits (youth - PassED QL Limits CEDL FREM 23 Antrueny 153% (11.7 ug/L) Cobalt 11.7%

marked wrong Cobalt

128%

75 %

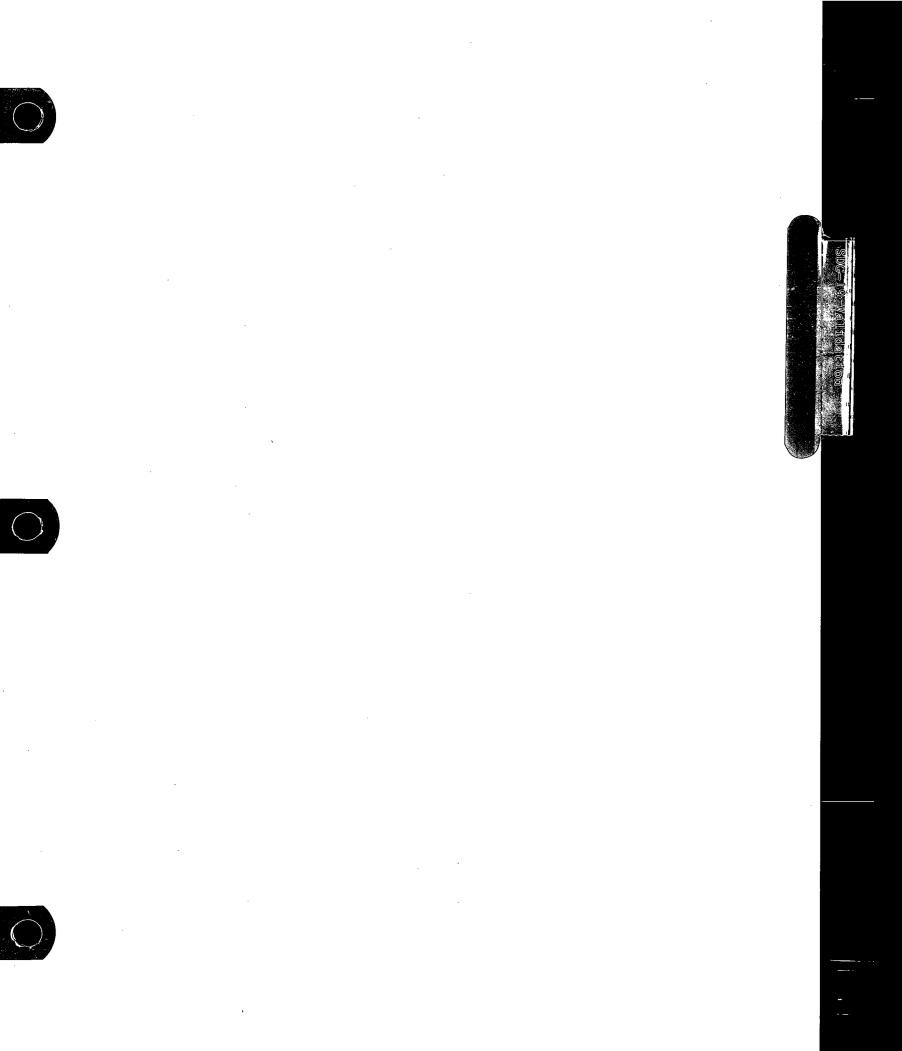
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MEVLURY

4 × 1 20 × 64 (4.7)	2
Hanks-	- DLS gel false negatives.
	- IDLS gel ta/se negatives.
102 104	erterance ICSA KSB
165. 1814	Frem 4 80-120 To except AL, CA, Fe, Mg
	Pass Qi Limites
sine.	Simple 75-125%
	Passers Criteria
Duplicide	+35 Report
, Andre Krimen in the Control of the	COSEX 25.5 + 2.11 21.5 + J. 2.15 (11.5)
Cab Cont	ol Sample - Passes ac Limits
· .	and the second of the second o
107 Seni	al Dilution - Franks Barris 15/0.
The Control of the Co	
X 56-04	5 Should be quited "X"
<u> </u>) / / / / / /
	"E" Qualities for all Barrow Samples
*	LE Branches L. C. Samme Zana Land
Field 6	and Lad = 4 yl Calcium 138
1/000	2/1/2 6
	Sodium 697
	Sodum 697 Magnasium 10
	Sodum 697 Magnosum 10
Edd	Madramm 10
Field	wedram 10

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REVIEW OF ORGANIC CONTRACT LABORATORY PACKAGE

Site Name: Wells G & H Superfund Site

Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: *E1005-02* SAS No.: SDG No.: 19-1

Matrix: soil

No. of Samples: 19

Sample Dates: 10/4 + 10/11/94Shipping Date: 10/4 + 10/11/94

Date Rec'd by Lab: 10/5 + 10/12/94

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness

- Matrix Spike/Matrix Spike Dup.

- Holding Times

- Field Duplicates

- GC/MS Tuning

- Internal Std Performance - Pest. Inst. Performance

- Calibrations - Blanks

- Compound Identification

- Surrogate Recoveries

- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.

J = Approximate data due to quality control criteria.

R = Reject data due to quality control criteria.

U = Compound not detected.

UJ = Compound detection limit is approximate

Reviewer:

Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received: Data package complete

II. HOLDING TIMES:

		VOA	BN	JA.	Pe	st.
Sample ID	Date Sampled	Date Anal:	Date Extr.	Date Anal.	Date Extr.	Date Anal.
FB	10/04/94	10/15/94	10/06/94	10/07/94		
1C	10/04/94	10/15/94	10/05/94	10/06/94	10/05/94	10/07/94
1D	10/04/94	10/15/94	10/05/94	10/06/94	10/05/94	10/06/94
2A	10/04/94	10/15/94	10/05/94	10/07/94	10/05/94	10/07/94
2B	10/04/94		10/05/94	10/07/94	10/05/94	10/06/94
2C	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
2D	10/04/94	10/15/94	10/05/94	10/07/94	10/05/94	10/06/94
2E	10/04/94	10/15/94	10/05/94	10/06/94	10/05/94	10/07/94
2F	10/11/94		10/13/94	10/15/94	10/13/94	10/21/94
3A	10/11/94		10/12/94	10/15/94	10/13/94	10/21/94
3B	10/11/94		10/13/94	10/15/94	10/13/94	10/21/94
4A	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
4B	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
4C	10/04/94	10/15/94	10/05/94	10/07/94	10/05/94	10/07/94
5A	10/11/94		10/13/94	10/17/94	10/13/94	10/21/94
5B	10/11/94		10/13/94	10/17/94	10/13/94	10/21/94
1A	10/04/94		10/05/94	10/06/94	10/05/94	10/07/94
1B	10/04/94		10/05/94	10/06/94	10/05/94	10/06/94
ТВ	10/04/94	10/15/94				

VOA:

- Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.
- Preserved: Both within 14 days of sample collection.
- Soils: Both within 10 days of sample collection.

BNA & Pest:

• Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

The DFTPP performance results for semi-volatile analysis were reviewed and found to	be
within the specified criteria (page D-40/SV).	

If no, samples affected:

Tunning passed all SVOC QC criteria

Calculations:

The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.

If no, samples affected:

Several files containing BFB information were lost during a memory error. No BFB exsists for the FB, TB, 2A, and 1D. Avidavits were submitted by the analysist indicating compliance with the lost BFB standards.

Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: 8/30 + 8/31/94

Dates of Continuing Calibration: 10/14, 10/15/94

Instrument ID: MACH 1
Matrix/Level: Soil/low

<u>Date</u>	Criteria Out RF, %RSD, %D	Compound (value)
8/30	RSD	methylene chloride (35.1) acetone (69.9)
8/31	RSD	2-butanone (41) methylene chloride (45) acetone (68)
10/14	D	methylene chloride (685) acetone (384)
10/15	D	bromoform (36) methylene chloride (196) acetone (387)

Calculations:

Initial calibration uses 5 concentrations. All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA). All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: 9/5/94

Dates of Continuing Calibration: 10/6, 10/7, 10/14, + 10/17/94

Instrument ID:

Matrix/Level: Soil/low

<u>Date</u>	Criteria Out RF, %RSD, %D	Compound (value)
9/5	RF RSD	2,4-dinitrophenol (0.03) 4-chloroaniline (43)
		3-notroaniline (66) 2,4-dinitrophenol (38) 3,3-dichlorobenzidine (35)
10/6	RF D	3-nitroaniline (0.02) 4-chloroaniline (48)
		hexachlorobutadine (31) 3-nitroaniline (84) 4 nitroaniline (50)
		4-nitroaniline (59) 4,6-dinitro-2-methylphenol (28) pentachlorophenol (44)
10/7	RF	carbazole (37) 3-nitroaniline (0.03)
10/14	D	indeno(1,2,3-cd)pyrene (38) dibenz(a,h)anthracene (33)
10/17	D	2-fluorobiphenyl (31) indeno(1,2,3-cd)pyrene (27) dibenz(a,h)anthracene (31) terphenyl-d ₁₄ (26)

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV. All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50% All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

<u>Date</u>	<u>Lab ID</u> <u>Matrix</u>		Compound	Concentration	
10/15/94	VBLK02	soil	methylene chloride	9.5 ug/Kg	
10/07/94	SBLKS1	soil	acetone di-n-butylphthalate	6.6 189	

Equipment and Field Blanks:

<u>Date</u>	<u>Lab ID</u>	<u>Matrix</u>	Compound	Concentration
10/15/94	FB	water	methylene chloride acetone toluene	7.7 ug/l 1.1 1.7
10/15/94	TB	water	methylene chloride acetone toluene	1.1 0.8 1.1

If concentration < CRQL, report CRQL If concentration > CRQL, but less than action level (5x or 10x), report as (U) If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

VOA

B/N

Samples

TOL BFB DCF

NBZ FBP TPH PHL 2FP TBP

Pass criteria

Pass criteria

Calculations:

	Water	<u>Soil</u>	
$TOL = Toluene-d_8$	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
DCF = 1,2 Dichloroethane-d ₈	76-114	70-121	
NBZ = Nitrobenzene-d ₅	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d ₁₄	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: soil

Sample Nos.: 1D and 1C

List compounds that do not meet the following RPD criteria:

- An RPD of < 30% for water
- An RPD of < 50% for soil

<u>Fraction</u>	Compound	Sample Conc.	Dup Conc.	<u>RPD</u>
VOCs	1,2-dichloroethene	217	18,772	195
	2-butanone	11	ND	
	trichloroethene	93	4,910	192
	tetrachloroethene	73	2,430	188
	ethylbenzene	54	4,337	195
	xylene	117	12,750	196
SVOC	1,2-dichlorobenzene	526	627	17.5
	phenanthrene	63	ND	
	fluoranthene	43	ND	•
	bis(2-ethylhexyl)phthalat	e 206	ND	

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID Date

I.S. Out

I.S. Area/RT

Acceptable Range Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J) Non-detects are flagged with (UJ) Page D-43, 51/SV Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date

Sample No.

Compound

%REC

Limit

VOC passed criteria

SVOC passed criteria

If any recoveries < 10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID

Date/Time

RT

Samples Affected

Actions

All 4,4-DDT retension times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound

Date/Time

<u>RT</u>

RT Window

Samples Affected

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID	DDT or Endrin	% Breakdown	Samples Affected
PEM02	endrin	35.5	DB1701 column
PEM03	endrin	36	DB1701
PEM04	endrin	<i>78</i>	DB1701
PEM05	<i>4,4-DDT</i>	33	DB1701
PEM06	endrin	<i>37</i>	DB1701
PEM07	endrin	32	DB1701
PEM02	endrin	33	DB608
PEM03	endrin	38	DB608
PEM04	endrin	31	DB608
PEM05	endrin	26	DB608
PEM10	endrin	24	DB608

Calculations:

If breakdown > 20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown > 20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

•	Column 1	Column 2
Samples	TCX DCB	TCX DCB
FB	7	25 28

Calculations:

QC Limits

TCX = Tetrachloro-m-xylene

60-150

DCB = Decachlorobiphenyl

60-150

XII. PESTICIDE CALIBRATION (Form 6E)

Initial Calibration: Must be calibrated with 3 conc. Calibration factors on page D-41/pest.

RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD < 10% or 15%

<u>Date</u>	Compound	<u>Mean</u>	<u>%RSD</u>	<u>Column</u>	Samples Affected
10/05/94	alpha-BHC		23	DB1701	
10/17/94	alpha-BHC		24	DB1701	
	4,4-DDD		28	DB1701	
10/05/94	gamma-BHC		26	DB608	
	alpha-BHC		31	DB608	
	delta-BHC		22	DB608	

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of $<\!15\%$ on quantitation or 20% on confirmation for continuing calibration.

Compound	<u>%D</u>	Column	Sample Affected
endrin	72	DB1701	INDAM03
methoxychlor	30	DB1701	,,
<i>4,4-DDT</i>	41	DB608	INDAM04
methoxychlor	<i>30</i>	DB608	"
delta-BHC	31	DB608	INDBM04
	endrin methoxychlor 4,4-DDT methoxychlor	endrin 72 methoxychlor 30 4,4-DDT 41 methoxychlor 30	endrin 72 DB1701 methoxychlor 30 DB1701 4,4-DDT 41 DB608 methoxychlor 30 DB608

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

<u>Date</u>	Sample No.	Compound	%REC
	florisil	alpha-BHC	77
	-	<i>4,4-DDT</i>	<i>51</i>
		TCX	55
		decachlorobiphenyl	<i>79</i>
	GPC	4,4-DDT	117
		gamma-BHC	<i>128</i>
		hepachlor	<i>126</i>
		aldrin	125
		dieldrin	127
		endrin	206

QC Limits on florisil %REC = 80-120%

QC Limits on GPC %REC = 80-110%

If %REC <80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

<u>Date</u>	Sample No.	Compound	<u>%REC</u>	<u>Limit</u>
	2D	gamma-BHC	133	46-127
		dieldrin	139	31-134
		endrin	161	42-139
		4,4-DDT	149	23-134

BNA:		·	
	ı		
PEST/PCB:			

XVI. SAMPLE QUANTITATION

VOA:

Nen-19-1 Wed	Is GHH ROPRA
Vocs	
Suroquites	
4-46 BFB- 90%	Chloobenzene = 1570
3506576 x 50 06/L 476413 x 0.819	= 44.93 vg/L /50 vg/L x100 = 29.8%
2-2D TOL 118%	chlo-shinzal = (>TD
597396 x 50 vs/L = 5 491300 x 1.031	58.97/ x100 = 117.9%
Introd Stos ac Pasces M 7400's	
CALS 8/30/94 PRF5 >0.05 PSD3 (3	30% puthylin chlanide 34.5 autone 68
PSDS CW + RRFS OK	2-butanone 41
PREFOS TOlvenl = 1.637	386414 x 5 ug/L - 1.637 234005 x 5 ug/L

	,			
cal 8/31/44				
RRF3 > 0.05 RSDS 230%		m Chlon		
	actore		68	- <u> </u>
Cales for RSDs + RRF OK				
C C 27				
ReF ₅₀ z-butanone = €.527	·			
141984 x	50 yg/L -	-0.52	65	
	× 50 my L			
	U		an an angal way contains the same time and an analysis and an an an analysis and an	
2CAL 10/14 1256 hrs				
RRF570.05 900 1256		natine cl		
		Hone		334
900 cal ok	NOVO	as form		36
REFOS Méthylone chlonde				
835701 x 5 yg/L =	22.895			-
36501 X 5 Vg/L				
			. 100 100 100 100 100 100 100 100 100 10	
cal 10/15/94 1407 has				
PEFS 70,05 90D 625		nethylene		
	1	autône	397	
RRF50 benzene = 0.749	<u>:</u>			
47-45/8 × 50 mg	1_ 0	0.749	41 T	
6335 72 × 50 C	1 <u></u>	/ / /		
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Quartiction						
		@ 5.0	•			
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cal 1	914/94	1745 hrs			
22F3 7	0.05	%cD > 3	Dibenzpa	h) an Thrace =	33
				ob, Phenyl = 31	
[2121-50	Chrysei	e - 0.892	72964	20 x 2 = ,89 x 50	
CAL 10/1	7/114	17:10 has			
12F> 70	.05		Indeno(123 cd Dibenz(ah) an terphenyldig	Through 31	
Benzo(a) p	Yscol.	- 0.909	<u>94691</u> e3306	x 40 = 909 x 50	
Juing -	ξe'>> (i.	· Lenia			
10/14/94		: 19 hvs			
W/Z	પંપા 7	- 74.34	11.234/15	1112 = 74.3	-1 %

1.0

Pesticides.

SDG-19

Surregules	Pemaining OK
2E DC	B2 = 393 %
FOULD	645 b 38 x 10,000 ml = 56.218
	35.4 g x 0.79 x 2 ul x 2 051375
added	2 ml x 0.2 x 1000 = 14.30
	35.4 x 0.79
	56.218/14.30 × 100 = 393 %
	56.218/14.30 ×100 = 3973 %
4/3	56.218/14.30 ×100 = 3473 % TCX 1 = 112 %
	TCX 1 = 112 % 295034 x 10,000 M
43 Form	TCX / = 1/2 %
	TCX 1 = 112 % 295034 x 10,000 M
Fouri	TCX 1 = 112 % 295034 x 10,000 ml 35.2g x .78 x 2ml x 3281700
Fouri	TCX 1 = 1/2 % 295034 x 10,000 nl 35.2g x .78 x 2 ml x 3281700 2 ml x 0.2 x 1000 = 14.56
	7CX / = 1/2% 295034 x 10,000 l
Fouri	TCX 1 = 1/2 % 295034 x 10,000 nl 35.2g x .78 x 2 ml x 3281700 2 ml x 0.2 x 1000 = 14.56

Calibr	ation by toke	median	mass obtained from form 7 E
- cwa yr	William William St.	Patros or	Many LE
		200703	TOILM 6-
<u> </u>	14-DDT HIGH	DB1701 = 2	446865.63
	INDAHOI 4,4	1-DDT = 7830	29/0.32 = 2446965.63
:	2SDS > 20% alpha - BHC 23		Calculated ok
13170/	1 12 DDS >20 alpha -BHL = 2 4,4-DDID = 2	¥	chous ok
DBI	701 Low a'		22100.00 01 ng = 3322100.00
0/5/94	DB608	RSD'S >20	
	calculations	ck .	gamma BHC 22 gamma BHC 26
	endrin medic	m = 9336/2.	50
		79083/	0.08 = 983612.50
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DB608 11/1/94 125D'S 620
Calculations ok
aldrin High 4907431.25 785789 0.16 = 4907431.25
PCB Cul Fautores form 6F
aroclor 1242 DB1701 10/5/94
Prok 1 = 157405 31481 0.2 = 157405
D3608 10/20/94
01
aroclor 1260 Peak 2 - 94835
arcolor 1016+1260 canbe 18967/.2 = 94835
Combined into one sample
Listed under 1016.
Resolution summary resolutions > 60 %
DOT ENdrin break-Down 1250 < 25%
1701 PEMO1 - Pass
701 PEMOZ - 44 DDT = 26 % PSD
endrin break down = 35.5 Combined = 39.9

		<u> </u>				· · · · · · · · · · · · · · · · · · ·
	PEMO2	DB1701				
		:				·
	endrin	breakdown				
	cn (dring			- 0.11	
	endr	in aldehyde			= 0.07	
		rin ketone	30692	-/205808	37.50:0.0	1 49
<u>:</u>				00 = 35.5		
		0./	1973 - Table 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 - 1975 -			
	PEM03	Λ				
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		4 25%		· · · · · · · · · · · · · · · · · · ·	• •	
	10112	23 / 0				
	PENIOY	DBITOI	~~ ^/			
	<i>K</i>	PD endrin =	. /8/0			
	<u> </u>					
:		DB1701	/			
	<u> </u>	D 4,4-DOT	= 3 <u>3/</u> 0			
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REVIEW OF INORGANIC CONTRACT LABORATORY PACKAGE

Case Number:

Site Name: Wells G & H Superfund Site

Laboratory: NETL

No. of Samples/Matrix: soil

SDG: 19

Reviewer: RETEC

SOW: Completion Date: 11/17/94

Reviewer's Name: R. Roat

DATA ASSESSMENT SUMMARY

		<u>ICP</u>	<u>AA</u>	<u>Hg</u>	<u>Cyanide</u>
1.	Holding Times	О	O	O	O
2.	Calibrations	O	O	O	O
3.	Blanks	O	O	O	O
4.	ICS	Ο .	O	O	O
5.	LCS	О .	O	O	O
6.	Duplicate Analysis	O	O	O	O
7.	Matrix Spike	X	O	O	0
8.	Serial Dilution	X	-	_	-
9.	Overall Assessment	O	O	O	O

O = Data had no problems or qualified due to minor problems

Action Items:

M = Data qualified due to major problems

Z = Data unacceptable

X = Problems, but do not affect data

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis	Cyanide Analysis Date	Metal Analysis Dates	Action
4A	10/04/94			10/27/94	
4B	10/04/94			10/27/94	
4C	10/04/94	10/24/94	10/14/94	10/27/94	
2A	10/04/94	10/24/94	10/14/94	10/27/94	
2 <i>B</i>	10/04/94			10/27/94	
2C	10/04/94			10/27/94	
2D	10/04/94	10/24/94	10/14/94	10/27/94	
2E	10/04/94			10/27/94	
<i>1A</i>	10/04/94			10/27/94	
1B	10/04/94			10/27/94	
1D	10/04/94	10/24/94	10/14/94	10/27/94	
1C	10/04/94	10/24/94	10/14/94	10/27/94	
3A	10/11/94			10/27/94	
3B	10/11/94			10/27/94	
5A	10/11/94			10/27/94	
5B	10/11/94			10/27/94	
2F	10/11/94		<u></u>	10/27/94	

Metals - 180 days from collection preserved pH < 2 Mercury - 28 days from collection preserved pH < 2 Cyanide - 14 days from collection preserved pH > 12 If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

Date ICV/CCV Analyte %R Action Samples Affected

Passed all validation criteria

Action:

 Accept
 Estimate (J)
 Reject (R)

 Metals:
 90-110%
 75-89%, 111-125%
 <75%, >125%

 Mercury:
 80-120%
 65-79%, 121-135%
 <65%, >135%

 Cyanide:
 85-115%
 70-84%, 116-130%
 <70%, >130%

2. <u>Analytical Sequence</u>

- A. Did the laboratory use the proper number of standards for calibration as described in the SOW? Yes
- B. Were calibrations performed at the beginning of each analysis? Yes
- C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? *Yes*
- D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- > 0.995? Yes
- E. Was a standard at 2xCRDL analyzed for all ICP analysis? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. <u>Laboratory Blanks</u>

DATE

ICB/CCB

PREP BL

ANALYTE

CONC.

Passed all validation criteria

2. Equipment/Trip Blanks:

Not applicable to soils

DATE

EQUIP BL #

ANALYTE

CONC.

3. Frequency Requirements

- A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes
- B. Was a calibration blank run every 10 samples or every 2 hours? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: Passed validation criteria

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

- 1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.
- 2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT

MAX CONC.

AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

		Percent F	Recovery
	< 50%	50-79%	>120%
Positive sample results	R	J	J
Non-detected samples	R.	UJ	Α

<u>DATE</u> <u>ELEMENT</u> <u>%R</u> <u>ACTION</u> <u>SAMPLES AFFECTED</u>

Passed all validation criteria

2. Frequency Requirements

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT

CONC. DETECTED IN THE ICS

CONC. OF INTERFERENTS

IN THE ICS

AL CA FE MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE ELEMENT SAMPLE SAMPLE INTERFERANT ESTIMATED AFFECTED CONC. AL CA FE MG INTERF.

Action:

^{1.} The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.

^{2.} Estimate (J) positive results for affected elements for samples with levels of >50% or more.

^{3.} Reject (R) positive results if the reported concentration is due entirely to the interferant.

^{4.} Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: MS-2D

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added SSR - spikes sample result SR - sample result

ANALYTE	<u>SSR</u>	<u>SR</u>	<u>S</u>	<u>%R</u>	<u>ACTION</u>
anitmony	90.2	0.0	130.4	69.2	esitmate conc.
lead	6.1	4.4	4.3	38.1	estimate conc.

Actions:

^{2.} If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery			
	< 30 %	<u>30-74%</u>	>125%	
Positive Sample Results	J	J	J	
Non-Detected Results	R	UJ	Α	

2. Frequency Criteria

- A. Was a matrix spike prepared at the required frequency? Yes
- B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? *Not required*

^{1.} If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	ACTION
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	0.5	4.4	2.6	52.1	estimate
Magnesium					
Manganese	•				
Mercury					
Nickel					
Potassium		;			
Selenium					
Silver					
Sodium		1			
Thallium					
Vanadium					
Zinc					
Cyanide					
Antion		•			

Action:

^{1.} Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is > CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. 1C and 1D

<u>ELEMENT</u>	CRDL	SAMPLE #	DUPLICATE #	RPD	<u>ACTION</u>
Aluminum		1,005	1,586	44.8	
Antimony					
Arsenic					
Barium		11	71.5	146	J
Beryllium					
Cadmium					
Calcium		513	825	46.6	
Chromium		25.8	77.7	100	
Cobalt					
Copper		1.6	3.2	66.6	
Iron		249	470	61.4	
Lead		2.4	4.5	60.8	
Magnesium		41.6	79.6	62.7	
Manganese		9.0	15.0	50	
Mercury					
Nickel		2.2	ND		
Potassium		•			
Selenium					
Silver					
Sodium		34.4	48.6	34.2	
Thallium		•			
Vanadium		0.5	1.3	88.8	
Zinc		174	301	53.4	
Cyanide					

Action:

^{1.} Estimate (J) positive results for elements which have a RPD >30% for water and >50% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE

ELEMENT

<u>%R</u> <u>ACTION</u>

SAMPLES AFFECTED

Passed all validation criteria

Action:

	Percent Recovery		
	< 50 %	<u>51-79%</u>	> 120 %
Positive Results	R	J	J
Non-Detected Results	R	UJ	Α

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? Yes

IX. FURNACE AA ANALYSIS

- 1. <u>Duplicate Precision</u>
- \underline{X} Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +-20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. <u>Post Digestion Spike Recoveries</u>

X Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

- X MSA was used to quantitate analytical results when contractually required.
 - \underline{X} Correlation coefficients > 0.995, accept results Correlation coefficients < 0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.

2. If the sample absorbance is < 50% of post digestion spike absorbance the following actions should be applied:

	<10%	<u>>115%</u>	
Positive Result	J or R	()	J
Non-detected	R	J	A

3. Estimate (J) sample result if MSA was required and not performed.

4. Estimate (J) sample result if correlation coefficient was < 0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

Serial dilutions were not performed for the following:

 \underline{X} Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT	<u>IDL</u>	50xIDL	SAMPLE #	DUPLICATE #	<u>%D</u>	<u>ACTION</u>
Aluminum						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium			413	475	<i>15.0</i>	
Cobalt						
Copper						
Iron			2,495	2,890	15.8	
Lead			•			
Magnesium			462	574	24.2	
Manganese			80.0	90.0	12.5	
Nickel						
Potassium			•			
Silver			1			
Sodium						
Vanadium						
Zinc					,	
Action:				·		

Action:

1.

Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1	Instrument	Detection	Limits
1.	mon unicit	Detection	

 \underline{X} Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. Reporting Requirements

- A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes? **Yes**
- B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? Yes
- C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

<u>X</u>	other parameters.	nge for ICP and within the calibrated range for all range/calibration range of the instrument for the
	following elements:	
1. ICP:	Sample Calculation:	
		:
AA Fu	urnace:	
Mercu	ary:	1 1
Cyani	ide:	

NEIL 19-1

Metals

Dell	<u> </u>	V 1	1-01000	
			Samples	Received
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48		χ		
40	X			·
2A	χ			
213		Χ		
26		χ		
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26		X		
hA.	·	X		
18		Х		
10)			
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	Crail		66.7	
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· Praferences tegining + Em, but before coul
· True / ohrs
· Tome of birs · ICP interference only applicable it & Al, Ca, Fe: Mg are = Concentration in original sample · No Transcription emons (52)
Mg are = Concentration in orginal sample
· NO Transcription emors
Spike Sample #25% if spike added 2 1/4 of sample result
2. 1 and 1 are 1
Fold Antimony of
Failed Anthonomy of Ceach (F) 33 R= SSR-SR x100
Janutify SA
Touchfation 23.93 mg = 23°30 vg/L x (2) Liters = 4.1246 vg/g or 4.124
L 1000 x 1.5149 x . 768
1-2 grams soit 100 ml
1-2 grams soit 100 ml 1.514 grams 200 mls
produly est (5)
Deplicates Lead tailed Formaci 52%
IF CX) > 5 x CROL must be \$20%
IF [X] < 5x CROL Then = CROL
IF [X] < CROL Then no compansor
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LCS Pass QC Cimits
1CP Server Dilution % D>10%
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MS-20	Saml as MS-ZA	except no ch	ironi avad, Le	L>5
W>-20	Saml as MS-ZA Tun 50x IDL	except No Ch	from Quad, Le	2,>5
W>-20	Saml as MS-ZA Than SOX IDL	except No Ch	ironi Quad, Le	L>5
MS-20			ironi Qual, Le	2,>5
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REVIEW OF ORGANIC CONTRACT LABORATORY PACKAGE

Site Name: Wells G & H Superfund Site

Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: *E1006-05* SAS No.: SDG No.: *20-1* Matrix: *soil*

Sample Dates: 10/5 + 10/18/94Shipping Date: 10/5 + 10/18/94

No. of Samples: 15

Date Rec'd by Lab: 10/6 + 10/19/94

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

- Data Completeness

- Matrix Spike/Matrix Spike Dup.

- Holding Times

- Field Duplicates

- GC/MS Tuning

- Internal Std Performance

- Calibrations

- Pest. Inst. Performance

- Blanks

- Compound Identification

- Surrogate Recoveries

- Compound Quantitation

Overall comments:

Data package was acceptable

Definition of qualifiers:

A = Acceptable data.

J = Approximate data due to quality control criteria.

R = Reject data due to quality control criteria.

U = Compound not detected.

UJ = Compound detection limit is approximate

Reviewer:

Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received: Data package complete

II. HOLDING TIMES:

	2.0	VOA	BN	VA.	Pe	št.
Sample ID	Date Sampled	Date Anal.	Date Extr.	Date Anal.	Date Extr.	Date Anal:
A	10/05/94	10/15/94	10/12/94	10/14/94	10/11/94	10/27/94
В	10/05/94	10/15/94	10/12/94	10/14/94	10/11/94	10/27/94
C	10/05/94	10/15/94	10/12/94	10/13/94	10/11/94	10/27/94
D	10/05/94	10/15/94	10/12/94	10/14/94	10/11/94	10/27/94
E	10/05/94	10/15/94	10/12/94	10/14/94	10/11/94	10/27/94
F	10/05/94	10/15/94	10/12/94	10/14/94	10/11/94	10/27/94
G	10/05/94	10/15/94	10/12/94	10/14/94	10/11/94	10/27/94
Н	10/05/94	10/15/94	10/12/94	10/13/94	10/11/94	10/27/94
X	10/05/94	10/15/94	10/12/94	10/15/94	10/11/94	10/27/94
ТВ	10/05/94	10/15/94				
FB	10/05/94	10/15/94	10/07/94	10/14/94	10/28/94	11/02/94
SL-02	10/18/94		10/24/94	10/27/94	10/21/94	10/27/94
SL-17/18	10/18/94		10/24/94	10/27/94	10/21/94	10/27/94
SL-19	10/18/94		10/24/94	10/27/94	10/21/94	10/27/94
SL-20	10/18/94		10/24/94	10/27/94	10/21/94	10/27/94

VOA: • Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.

Preserved: Both within 14 days of sample collection.

Soils: Both within 10 days of sample collection.

BNA & Pest: • Extr

• Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III. GC/MS TUNING (Form 5B)

The DFTPP performance results for semi-volatile analysis were reviewed and found to be)e
within the specified criteria (page D-40/SV).	

If no, samples affected:

Tunning passed all SVOC QC criteria

Calculations:

The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.

If no, samples affected:

Several files containing BFB information were lost during a memory error. No BFB exsists for the FB, TB, 2A, and D. Avidavits were submitted by the analysist indicating compliance with the lost BFB standards.

Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: 8/30 + 8/31/94

Dates of Continuing Calibration: 10/14, 10/15/94

Instrument ID: MACH 1 Matrix/Level: Soil/low

<u>Date</u>	Criteria Out RF, %RSD, %D	Compound (value)
8/30	RSD	methylene chloride (35.1) acetone (69.9) 2-butanone (37)
8/31	RSD	methylene chloride (45) acetone (68)
10/14	D	methylene chloride (685) acetone (384)
10/15	D	bromoform (36) methylene chloride (196) acetone (387)

Calculations:

Initial calibration uses 5 concentrations. All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA). All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: 9/5/94

Dates of Continuing Calibration: 10/13, 10/14, + 10/27/94

Instrument ID:

Matrix/Level: Soil/low

<u>Date</u>	Criteria Out RF, %RSD, %D	Compound (value)
9/5	RF RSD	2,4-dinitrophenol (0.03) 4-chloroaniline (43) 3-notroaniline (66) 2,4-dinitrophenol (38) 3,3-dichlorobenzidine (35)
10/13	· <i>D</i>	4-chloroaniline (50) hexachlorobutadine (46) 3-nitroaniline (54) 4-nitroaniline (36) 4-nitrophenol (34) pentachlorophenol (36) benzo(g,h,i)perylene (35)
10/14	D	indeno(1,2,3-cd)pyrene (38) dibenz(a,h)anthracene (33) 2-fluorobiphenyl (31)
10/27	D	indeno(1,2,3-cd)pyrene (36) dibenz(a,h)anthracene (30)

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV. All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50% All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

<u>Date</u>	<u>Lab ID</u>	<u>Matrix</u>	Compound	Concentration
10/15/94	VBLK02	soil	methylene chloride	9.5 ug/Kg
10/14/94	SBLKS1	soil	acetone di-n-butylphthalate bis(2-ethylhexyl)phth	6.6 25 nalate 23

Equipment and Field Blanks:

<u>Date</u>	<u>Lab ID</u>	<u>Matrix</u>	Compound	Concentration
10/15/94	FB	water	methylene chloride	2.4 ug/l
			acetone	1.7
10/15/94	TB	water	methylene chloride	1.4
			acetone	1.1
			toluene	2.1

If concentration < CRQL, report CRQL If concentration > CRQL, but less than action level (5x or 10x), report as (U)

If concentration > than action level, report as (R)

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

VOA

B/N

Samples

TOL BFB DCF

NBZ FBP TPH PHL 2FP TBP

Pass criteria

Pass criteria

Calculations:

	<u>Water</u>	<u>Soil</u>	
$TOL = Toluene-d_8$	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
DCF = 1.2 Dichloroethane-d ₈	76-114	70-121	
NBZ = Nitrobenzene-d.	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d ₁₄	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: soil

Sample Nos.: *H* and *X*

List compounds that do not meet the following RPD criteria:

- An RPD of < 30% for water
- An RPD of <50% for soil

Fraction

Compound

Sample Conc.

Dup Conc.

RPD

Passed validation criteria

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID Date I.S. Out I.S. Area/RT

Acceptable Range Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J) Non-detects are flagged with (UJ) Page D-43, 51/SV Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

Date VOC passed	Sample No. criteria	Compound	<u>%REC</u>	Limit
10/15/94	CMSD	2,4-dinitrotoluene pentachlorophenol	103 122	28-89 17-109

If any recoveries <10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID

Date/Time

RT

Samples Affected

Actions

All 4,4-DDT retension times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound

Date/Time

RT

RT Window

Samples Affected

Must be within 0.02 min. of the mean RT (page D-47/PEST) If out of RT window and no peaks in expected RT window then its ok. If out of RT window and peaks are in expected RT window, recalculate conc. using different STDs.

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown >20%.

Standard ID	DDT or Endrin	% Breakdown	Samples Affected
PEM02	endrin	23	DB1701 column
PEM03	endrin	23	DB1701
PEM04	endrin	21	DB1701
PEM05	endrin	27	DB1701

Calculations:

If breakdown > 20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown >20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

	Column 1		Column 2		
Samples	<u>TCX</u>	<u>DCB</u>		<u>TCX</u>	<u>DCB</u>
FB MB	22	25		31 209	28 162
\boldsymbol{B}	194	53			
C	182	242			
PBLK01				34	46
PBLK03				<i>51</i>	40

Calculations:

OC Limits

TCX = Tetrachloro-m-xylene

60-150

DCB = Decachlorobiphenyl

60-150

XII. PESTICIDE CALIBRATION (Form 6E)

<u>Initial Calibration</u>: Must be calibrated with 3 conc. Calibration factors on page D-41/pest.

RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD < 10% or 15%

<u>Date</u> <u>Compound</u> <u>Mean</u> <u>%RSD</u> <u>Column</u> <u>Samples Affected</u>

Passed validation criteria

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of <15% on quantitation or 20% on confirmation for continuing calibration.

<u>Date</u>	Compound	<u>%D</u>	Column	Sample Affected
	endrin	45	DB1701	INDAM04
	methoxychlor	58	DB1701	n
	4,4-DDT	60	DB1701	"
	endosulfan sulfate	33	DB1701	INDBM04
	endrin ketone	31	DB1701	n n
	endrin aldehyde	37	DB1701	"

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

<u>Date</u>	Sample No.	<u>Compound</u>	%REC
	florisil	decachlorobiphenyl	131
	GPC	gamma-BHC	115
		aldrin	125

QC Limits on florisil %REC = 80-120% QC Limits on GPC %REC = 80-110% If %REC < 80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

<u>Date</u> <u>Sample No.</u> <u>Compound</u> <u>%REC</u> <u>Limit</u>

MS/MSD was performed on a highly contaminated sample, C. Concentrations of technical chlordane saturated the GC/ECD. Spike values were un-readable. The MS/MSD sample is meaningless.

XVI. SAMPLE QUANTITATION

VOA:

BNA:

PEST/PCB:

Validation	5DG 2	0-1		
Debrys pile			Criteria	TAL/1
GROUP A	10/5	10/6	compans	
		1:	. . x	
C				<u> </u>
D ₁			X	
E			X	
F			X	
G			X	
H				×
×				X
TRIP	1 1 1			
Field		abla		
51.2	K/16	10/19	×	

5L-2 K/16 10/19 X
SL-19 X
SL-20 X

VOA

Surrogates

- Passed QC Criteria

- No Transcription errors

Surrogates Continued. Sample B Tolvered = 104.55 % Chlorobencene 157D $\frac{448209 \times 50 \text{ mg/L}}{415663 \times 1.031} = 52.29 \text{ mg/L} / 50 \text{ mg/L} \times 100 = 104$. . Sample H Vrome Fromobenzene = 57.33% Chlorobenzene = 15m 182288 x 50 ug/L = 43.663 ug/L x100 = 87.33 Internal stas No Transcription errors 1945CD QC Caiteria +10090 -50% = 0.50 min Institut Calibrations 10 8 30 94 1256 hrs PES >0.05 PSDs 430% methylene chloride 35 actore 70% Calculations RIZE + 25D OK 2-butanone 37%

RRF Hexanone = 0.056 chloro benzare = 1570 5490 5 55/L = 0.056 245766 x 2 y/L TICAL 8/31/94 1407 hrs RRFS 70.05 RSDS & 30% methylene chloride 45.7 acetone REF and RSD (calculated ok 1-4-01/4 cobservers. 1570 Delitable 2027 5 01.630 1234794 x 50 4/L = C.630 991284 x 75 v9/L CCAL 10/14/94 1137 hrs 72F570,05 90D 62590 methylene chloride 685 acctone bromo form REF5 WEK = 0.189 36 $\frac{6915 \times 5 \times 91L}{36501 \times 5 \times 91L} = 0.189$

ccal 10/15/94 1104 hrs RRFS > 0.05 901) 425% mcThylese chlorale 196 acetone 397 Colculations 400 ok REF50 Frighteroethere 0.360 $\frac{227678}{633572} \frac{50.05/L}{50.3569}$ Lawring - 12035 RC Criteria 8/31/94 BFB 11/2 56 = 16.6% 1622 x100 = 16,6% method blanks VBLKOI Clean VBLK02 mc = 9.5 quetone 6.6 US/kg ms/msD Pass QC (riteria Field blanks MC - 2.4 yol actore = 1.7 Try blanks mc = 1.4 vg/L actore 1.1 more 2.1 Field dups H + X OK

Sample Quantitation

Sample + trichloroethene = 3.2 vg/kg

 $7589 \times 50 \text{ ng/m/x} 5 \text{ml}$ = 3.14 ng/g = 358525 \times .360 \times 5.192 \text{g} \times .90 \times \text{g/kg}

Qualifier Sample	25
C	Blank Qualify MC + acetone MB Contamination J For poor 900 ccal
H	Sand Cis C
χ	Save as H
DDL DDL	metroglas chiends arefore poor con ()
FB	mc + actions poor ccal (5)
TB	Sane as FB

5DG-20 SVOA 1/13/95

Surrogates

Passed QC Contoria

No Transcription errors

sample A 2-Fluoro biphenyl = 58%

199256 x 20 vg/ml = 29.08 vg/ml x100 = 58.1 108897 x 1.195 50 vg/ml

Sample SL-20 NBZ = 73%

93851 x 20 vg/ml = 36.49 vg/ml x 100 = 72.9% 150972 x .341 50 vg/ml

Internal Stds.

Passed OC Criteria

No typo's

TCAL 9/05/94 1150 hrs

RRB >0.05 RSDs L30% 4-chlorogn, line 43

us 3-nitroaniline 66

RRB + RSDs catalated OK

24-Dinitrophenol 38

Refgo anthracent : 0.963

417740 x 20 g/ml - 0963

ccal 10/13/94 1815 has RLFS >0.05 8DL 25% & 4-chloroaniline 50 hexachloro cyclopentadiene 4x 5 3-nitroanilie 54 90 D's calculated ok 4-nitrophenol 34 4-nitroaniline 36 Mentachlorophenol 36 5 Benzo(ghi) perylene 35 Surgete 2- Floorbiphing/ 28 TEF50 (hypert = 0.919 59406x 20 vg/ml = 0.9187 51730 x 25 vg/ml Cal 16/14/94 1745 hrs 40D L 25% Indeno (123 cd) pyrene 3 5 bills dibenzah)anthracene 33 2- Floring henry 31 RRF50 benzo(c)/frene = 0.910

69623 x 20 ug/ml = 0.9099 61209 × 25 ug/ml

Ccal 10/27/94 1614 hrs RRB > 0.05 90D 625% Indeno(123-cd) pyrene 36 disens (ah) anthracene 30 RRF50 Chrysene 0.909 153410 x 20 vg/ml = 0.909 135009 x 25 vg/ml Tuning - Passed QL (viteria m/2 51 = 47.35% 0/5/94 100.00 × 100 = 47.377/0 wethood blacks Din-buty/phithlate 25 4/kg bis a ethylhexy/)phithdate 23 Field blank MS/MSD MOD TOR 2,4-Divitio toleral 103% sample C . Pentachlorophens! Field Dip. H+X = 0k

Sample Quant sample c bis (2-ethylhexyl) phthalate = 86 ugi 16612 x 20 ng/w x 2ml x 1000 A/ = 85.9 89402 x . 81 x 50.9 g x 1,049 x 2ml (Xean fitation Quality di-n-buty/phthalate bis (2-ethyl hexyl) phthalide mis contamination J 3-notocompline + 4-chilorocontine poor I cal + ccal % RSD + 900. J Qual Indens + Dibenz 2000 900 CCAL Same as D Same as C J Indeno poor %D + Clad U Di-n-buty/phthate MB conte

	Pest/PiBs	SDG	-20 X	J 9/1:	results > 10	7/0
				2 Po	sities >150) 70
	Surrogides			TCX, TC	X2 DCB	DCB2
	Fail FB	DB1701 +	BB 603	22 z	5 31	28
	PBLK02 MB	08608			09	
	В	DB1701			53	
	С	081701		192		
	PBLKOI	03608		-		46
	7BLK03	DB100			51	40
	FOUND. 50	1701 TC 6015 x 5000 03125 x 2 wl	ulx Zgpc	>	26.86 y	9/kg
	odded 2n	1 x 0.2 x	(1000 =	13.86 V	clkg	
-1		26.9k/13.9	 16 × 100	= <i>193.</i> 8	%	
	Sample F 603	65	DCB		·	
	0.91 x 3	7 x 5,000 N/x 36g x 2nl	x 4k3241	2.50	0,33 ug/	kg.
	added 2ml	x 0.2	_ <u>x (0</u> 00 =	- 12,21 v	7/kg	

.......

Recovered = 10.33/12.21 ×100 = 84.6% * Calibration Factors 1 ich R>D> 4 10% 1 cal 4 20% * J Positions 710% DB1701 DB1701 LOW aldrin 16 34549 /0.01 ng = 3455000 15 NILDN: O aldrin = 3455000 600 912959/0.32 ng = 2852996 O 4,4-DDT 1416H 1,4 005 18 1853000 D3608 NO 205809/0.08 ng = 25726 0 endrin = 2572625 @ alpha-chlordane 141614 643817/0.16 ng =4023E6 4023862.50 DB170/ 6 Arcelox 1248 peak 1 = 162250, 32450 / 0.2 ng = 162250DB608 O Aroclor 1242 peak 2 = 189375 37975/0,2 mg = 189375

Percent resolution - Form 64 1655 QL Criteria 760% Endrin/4,4-DOT Breakdown 900 425% I roult >20% PEMOI = OK DB1701 121102 = endrin 23.14" Combined 23.14 PEMO3 = endrin 23.4 Combined 26.2 PEMOY = endrin 21.4x Combined 28.3 PEMO5 = endrin 27.2 Combines 32.3 7EMO4 endrin breakdown = 21.438 % e. aldyle = 25687/, 2041062,5 - 0.0125 e. Letoue = 23853/2694425 = 0,0096 endrin = 232071/2075025 = 0.112 0.0125+0.0088 = 19.01

0.0125+0.0088 = 19.01

Collibration Vertication FORM 7E RPD 425%

PPD'S Collected Ok + 715%

TODAMO4 DB1701 endrin = 45

ccul >

nethoxychlor= 58

4,4-DDT = 60

	INDBM	04 DB1701	
		endosultan sulfate	33
		endrin ketone	
		endrin aldehyde	
		, <u>.</u>	
<u>.</u>	Andrika	1 Significant Francisco 80	
	Trially fice	1 Sequence Form 8D	
		Passip QL requirements.	
	1 Acorsil	Check: Form 9A	
		Faded decachlorobiphinyl	131 %
	CofC C	Ton-up Form 98	
		garine - BHC 11590	
		oldrin 111%	
			· · · · · · · · · · · · · · · · · · ·
	Pesticide	Identification Form 10A	% D L 25%
	Sample		
	A	alan Mordane 452	
		4,4-DOT 476% 1254 126%	
	The second secon	1260 59%	
	ADL	aanna Chlordane 105	
		94-007	
			Action of the second

ADL 4X	1254	120%	
В	1260	190%	
BDL3X	cilpha chlord geminia ch 4,4-DDT	land Iordane	118 174 849
CDL	alpha-chla gamma-chi (4,4-DDT	ordant.	78 112— 49
D	ganma-ch	lordan	/35
DOL	alpha chi gamme cl	ordau Alordau	41 (\$3
E	olpha-chlor gamma ch 4,4-DDT		45 114 52
F	1260		54
FDL	gamma C 4,4-DDT	hlordare	0k 56 227

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. . .

计高层 建金铁矿

	G	alpha chlordane	280	
		gamme chlo-dane	5-40	
		4,4-00-	536	
		1254	40	
	HDL	gamma chlordare	61	
		14,4-100 -	240	
		44 ODE	69	
		4,4.000	157	
:	· · !-			
ţ	X DL	genner Mordane	10 b	
		4,4-000	25%	
		4, 4-DDE	5-4	
		4, 4-000	29/	
	ļ.			
	SL -17/18	alpha - Chlordane	1/8	
		garma-chlord	123	
		4,4-005	100	
	S1 - 10	alabor - Chland	. 6 36	
	SL-19	gamma chier	al and 55	
				·
	SL-20DL	alpha - chlordo	nc. 80	
	2013	gamma - chlor		
Approximation for the contract of the contract				
	SL-2	gama chlora	land 135	
		4,4-007	~ .	
		alpha-chlordan	SE SEPTEMBER OF THE SEP	
		aipna-unioco al	<u> </u>	The state of the s

3456 USL

Method blanks - Clean

MS/MSD - TO Contaminated to non

Field blanks - clean

	i o can no				
F	Telel dyps	H+X			>570, Jres
	11		X		RPD
•	4,4-DDE 1	62	4,4000	2149	172
	4.4 - 0100		4,4000	2664	169
	4,4 - DOT		4,4-DOT	3579	168
**:	alpha-chlore		alpha	4672	177
: 1	garma - chl		cymme	6696	177
	1254	4,879	1254	01281	1 FD
	1260	1,662	1260	20549	. 170
17.7		1			

Sample Quantitution

A 4,4-100T = 8.2 ug/kg DB170)

 $\frac{109118 \times 10,000 \text{ ng/ul}}{2527600 \times 359 \times .75 \times 2 \text{ ul}} = 8.2 \text{ vg/kg}$

Qualifi	<u>us</u>
l i	IT all compounds for poor surrogate
A	I 4,4-001 ICAL 1200 >1540
ADC	ok.
5	· · · · · · · · · · · · · · · · · · ·
306	J 4.4.000 16M2 RSD >15%
III CDC	J 414-00+ 1cm 1150 >15%
DOC	oh
· · · · · · · · · · · · · · · · · · ·	Lowrest typos alpha chlordam should be 7 yolky IP Gamma Chlordam Should be 1.9 yolky P
F ol	Market and the state of the sta
FOL of	k
(A 0)	X 750%
H DL	1 5 all detects for poor 10D or Sample dip

SL-20 ok SL-20 ok SL-70DL ok SL-17/18 ok SL-19 oh SL-19 oh XDL Tall detects for pear tild dep percent Deterrice >50%

REVIEW OF INORGANIC CONTRACT LABORATORY PACKAGE

Case Number:

Site Name: Wells G & H Superfund Site

Laboratory: NETL

No. of Samples/Matrix: soil

SDG: 20

Reviewer: **RETEC**

SOW:

Reviewer's Name: R. Roat

Completion Date: 12/06/94

DATA ASSESSMENT SUMMARY

		<u>ICP</u>	<u>AA</u>	<u>H</u> g	<u>Cyanide</u>
1.	Holding Times	O	О	О	O
2.	Calibrations	O	О	О	O
3.	Blanks	Ο	O	О	O
4.	ICS	O	O	O	O
5.	·LCS	O	O	Ο	O
6.	Duplicate Analysis	O	Ο	Ο	O
7.	Matrix Spike	X	О	O	O
8.	Serial Dilution	X	-	-	-
9.	Overall Assessment	O	O	O	O

O = Data had no problems or qualified due to minor problems

Action Items:

M = Data qualified due to major problems

Z = Data unacceptable

X = Problems, but do not affect data

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide Analysis Date	Metal Action Analysis Date
FB	10/05/94	10/24/94	10/14/94	10/27/94
A	10/05/94			10/27/94
В	10/05/94			10/27/94
C	10/05/94	10/24/94	10/14/94	10/27/94
D	10/05/94			10/27/94
E	10/05/94			10/27/94
F	10/05/94			10/27/94
G	10/05/94			10/27/94
Н	10/05/94	10/24/94	10/14/94	10/27/94
X	10/05/94	10/24/94	10/14/94	10/27/94
SL-02	10/18/94			10/27/94
SL-17/18	10/18/94			10/27/94
SL-19	10/18/94			10/27/94
SL-20	10/18/94			10/27/94

Metals - 180 days from collection preserved pH < 2 Mercury - 28 days from collection preserved pH < 2
Cyanide - 14 days from collection preserved pH > 12
If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

<u>Date</u> <u>ICV/CCV</u> <u>Analyte</u> <u>%R</u> <u>Action</u> <u>Samples Affected</u>

Passed all validation criteria

Action:

 Accept
 Estimate (J)
 Reject (R)

 Metals:
 90-110%
 75-89%, 111-125%
 <75%, >125%

 Mercury:
 80-120%
 65-79%, 121-135%
 <65%, >135%

 Cyanide:
 85-115%
 70-84%, 116-130%
 <70%, >130%

2. <u>Analytical Sequence</u>

- A. Did the laboratory use the proper number of standards for calibration as described in the SOW? Yes
- B. Were calibrations performed at the beginning of each analysis? Yes
- C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? *Yes*
- D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- > 0.995? Yes
- E. Was a standard at 2xCRDL analyzed for all ICP analysis? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

-

III. BLANK ANALYSIS RESULTS (Form 3)

List the blank contamination.

1. <u>Laboratory Blanks</u>

DATE

ICB/CCB

PREP BL

ANALYTE

CONC.

Passed all validation criteria

2. Equipment/Trip Blanks:

Not applicable to soils

DATE

EQUIP BL #

ANALYTE

CONC.

No contaminants detected above CRDL

3. Frequency Requirements

- A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes
- B. Was a calibration blank run every 10 samples or every 2 hours? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: Passed validation criteria

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

- 1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.
- 2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT MAX CONC. AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

		Percent F	Percent Recovery	
	< 50 %	50-79%	>120%	
Positive sample results	R	J	J	
Non-detected samples	R	UJ	Α	

<u>DATE</u> <u>ELEMENT</u> <u>%R</u> <u>ACTION</u> <u>SAMPLES AFFECTED</u>

Passed all validation criteria

2. Frequency Requirements

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? **Yes**

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT

CONC. DETECTED IN THE ICS

CONC. OF INTERFERENTS

IN THE ICS

AL CA FE MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE ELEMENT SAMPLE SAMPLE INTERFERANT ESTIMATED AFFECTED CONC. AL CA FE MG INTERF.

Action:

- 1. The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.
- 2. Estimate (J) positive results for affected elements for samples with levels of >50% or more.
- 3. Reject (R) positive results if the reported concentration is due entirely to the interferant.
- 4. Estimate (UJ) non-detected results for which false negatives are suspect.

-

V. MATRIX SPIKE (Form 5A)

Sample Number: MS-C

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added SSR - spikes sample result SR - sample result

<u>ANALYTE</u>	<u>SSR</u>	<u>SR</u>	<u>S</u>	<u>%R</u>	<u>ACTION</u>
anitmony	76.7	0.0	123.2	62.3	esitmate conc.
lead	241.8	84.3	121.9	129.1	estimate conc.
chromium	101.9	30.8	48.9	145.2	estimate conc.
copper	133.3	105.7	61.8	44.7	estimate conc.

Actions:

^{2.} If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery			
	<u><30 %</u>	<u>30-74 %</u>	<u>> 125 %</u>	
Positive Sample Results	J	J	J	
Non-Detected Results	R	UJ	Α	

2. Frequency Criteria

- A. Was a matrix spike prepared at the required frequency? Yes
- B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? *Not required*

^{1.} If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	<u>CRDL</u>	SAMPLE #	DUPLICATE #	<u>RPD</u>	<u>ACTION</u>
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium					
Cobalt					
Copper		105.7	60.6	54.3	estimate
Iron		15,241	7,198	71.7	estmate
Lead	0.5	4.4	2.6	52.1	estimate
Magnesium					
Manganese		91.0	69.7	26.5	estimate
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					

Action:

Zinc Cyanide

^{1.} Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is > CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. H and X

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	<u>RPD</u>	<u>ACTION</u>
Aluminum		6,875	6,761	1.6	
Antimony		ND	7.3		
Arsenic		9.4	9.6	2.0	
Barium		<i>155</i>	193	22	
Beryllium		0.3	ND		
Cadmium		4.9	2.9	51	
Calcium		1,356	1,565	14.3	
Chromium		345	630	58	
Cobalt		5.5	4.5	20	
Copper		35.7	30.6	15.3	
Iron		18,642	12,290	41	
Lead		174	238	31	
Magnesium		1,503	1,749	<i>15</i>	
Manganese		160	122	50	
Mercury		1.9	1.4	27	
Nickel		14.9	10.2	37	•
Potassium		393	436	10	
Selenium		ND	0.29		
Silver		0.6	1.0	50	
Sodium		51.5	51.4	0.2	
Thallium		ND	ND		
Vanadium		19.4	17.6	11.1	
Zinc		209	215	3	
Cyanide		0.6	0.5	18	

Action:

^{1.} Estimate (J) positive results for elements which have a RPD > 30% for water and > 50% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE

ELEMENT

%R ACTION

SAMPLES AFFECTED

Passed all validation criteria

Action:

	Percent Recovery		
	< 50 %	<u>51-79%</u>	<u>>120%</u>
Positive Results	R	J	J
Non-Detected Results	R	UJ	Α

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? Yes

IX. FURNACE AA ANALYSIS

- 1. <u>Duplicate Precision</u>
- \underline{X} Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within +- 20%.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. <u>Post Digestion Spike Recoveries</u>

X Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

- X MSA was used to quantitate analytical results when contractually required.
 - \underline{X} Correlation coefficients > 0.995, accept results Correlation coefficients < 0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.

2. If the sample absorbance is <50% of post digestion spike absorbance the following actions should be applied:

	<u>Percent Recovery</u> <10% 11-84% ≥115%			
Positive Result	J or R	N1	J	
Non-detected	R	1	A	

3. Estimate (J) sample result if MSA was required and not performed.

4. Estimate (J) sample result if correlation coefficient was < 0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

Serial dilutions were not performed for the following:

Serial dilutions were performed, but analytical results did not agree within 10% for analyte X concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

%D **ACTION** SAMPLE # **DUPLICATE** # **ELEMENT** IDL 50xIDL Aluminum Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron 11.5 249.2 220.5 none Lead

Magnesium

Manganese

Nickel

Potassium

Silver

Sodium

Vanadium

Zinc

Action:

1

Estimate (J) positive results if %D > 15. 1.

XI. DETECTION LIMITS (Form 10)

1. <u>Instrument Detection Limits</u>

 \underline{X} Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. Reporting Requirements

- A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes?

 Yes
- B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? Yes
- C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

 \underline{X} Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

Sample results were beyond the linear range/calibration range of the instrument for the following elements:

1. <u>Sample Calculation:</u>

ICP:

AA Furnace:

Mercury:

Cyanide:

Sample C was a resample 23-1 Metals SDG-20 collected Received Analysis 10/65 10/6 TAL FB

10/19

9

.. H

• Х

SL-2

SL-17/18

SL - 19

SL-20

Pb

TAL

Pb

Pb

Pb

Pb

TAL

FAL

Pb

Pb

Pb

ICAL + CCAL ICP Passer QC criteria for %02 Furnau Passed QC Criteria Coll vapor passed QC Cyanile pusser QC

Calculations for %R Correct. No Transcription errors

CRDL % R ± 20% (No validation Criteria)

TRUE Std [X] ZX CRDL

NO transcription croks

LCS FORM 7 Paysed al Criteria #20%

ICP & Serial dilutions 9/010 LD and sample (one >

SDX The IDE

Failed St-20 Lead "E"

Condition

Cornelation Coefficient > 0.995 for Hg + CN

Field dups - H + X RPD > 50% IF (X) > 5x (RDE ±4x (ROL IF (X) & 5x (RDE)

T POSITIVES

CMSD 1.503 grams volume = 0.2 Liters

Manganese = 15 vg

15 vg x 0.2 Liters $\frac{L}{1.503 \text{ grams}} \times .815$

Blanks - FORM 3 Pass QC (riteria L CRDZ No Transcription errors ICP interference Form 4 · + 20% except A, ca, Fe, Mg · Verformed beginning and earl of pon · Ture eny eight hours · Only applicable if concentration of Al, (a, Fe + Mg are > concentration in organial Sumple · No Transcription emors Plass QC Critaria CMS Sample Spike Sample recovery Form 5A + 25% I positives I nondetruk Finled anitimony 62.3 I positives us now detuts I positives Chromium 145.2 Copper 44.7 I positives Lead 129.1 applicable of SA ≥ 1/4 SR C m>D Sample Diplicate - Frem 6 == [x] > 5x CROL, ±20% (±35 Fox soils) trZ刊く 5x CROL (+ CRAL EF [X] < CROL Then no Comparison Falul for: Lead 129 grives Copper 54 Manganese

Qualiture

A Qualify lend as "J" failed spike + diplicate
precision

B Same as A

Chromium I spike, Copper I spike + dup

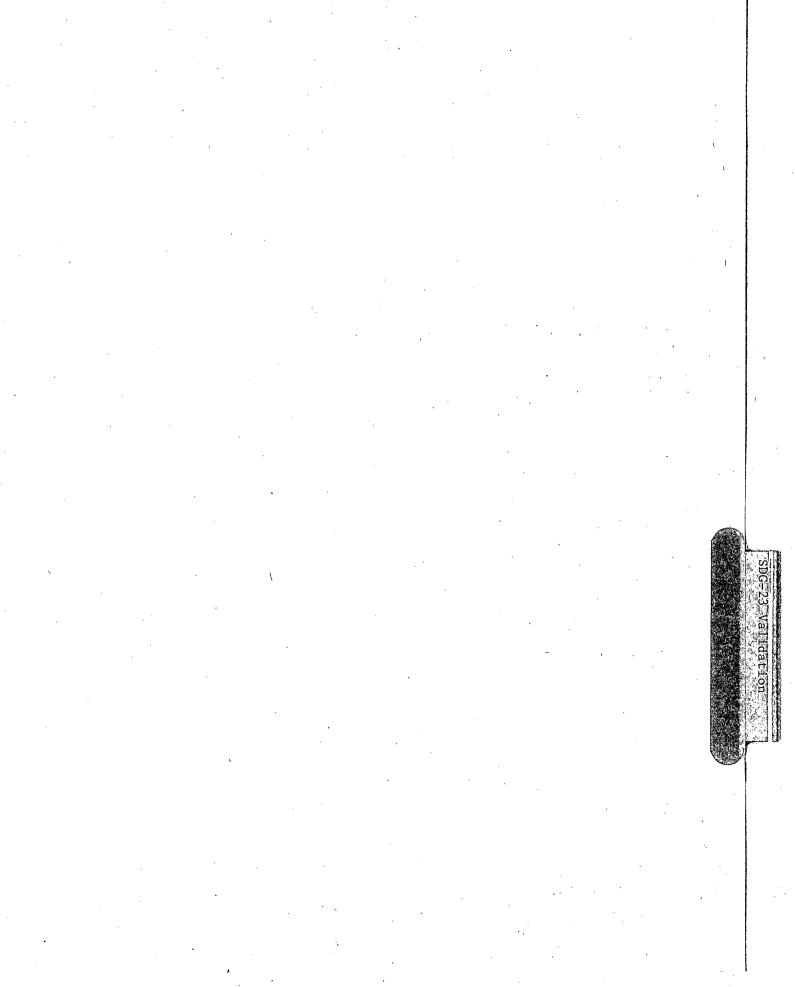
1 non I duplicate, Leal I spike + dup

3 same as B

Anthony UT spike, Chronium J spike + Field dup Copper I spike + dup mon J dup, Lend I spike + elup

SL-2 Same as G SL-17/18 Same as SL-2 SL-19 Same as SL-17/18 SL-20 Same as SL-19 X Same as H

FB Awitnesony UI, Copper U) Spite



REVIEW OF ORGANIC CONTRACT LABORATORY PACKAGE

Reference Number:

The hard copied data package received at RETEC has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No.: *E1116-12* SAS No.: Sample Dates: *11/15/94* SDG No.: *23-1* Matrix: *soil* Shipping Date: *11/15/94* No. of Samples: *12* Date Rec'd by Lab: *11/16/94*

The CLP SOW for requires that specific analytical work be done and the general criteria used to determine the performance were based on the examination of:

Data Completeness
 Holding Times
 GC/MS Tuning
 Calibrations
 Blanks
 Matrix Spike/Matrix Spike Dup.
 Field Duplicates
 Internal Std Performance
 Pest. Inst. Performance
 Compound Identification

- Surrogate Recoveries - Compound Quantitation

Overall comments:

Data package was acceptable

Site Name: Wells G & H Superfund Site

Definition of qualifiers:

A = Acceptable data.

J = Approximate data due to quality control criteria.

R = Reject data due to quality control criteria.

U = Compound not detected.

UJ = Compound detection limit is approximate

Reviewer: Date:

I. DATA COMPLETENESS

Missing Information, Date Lab Contacted, Date Received: Data package complete

II. HOLDING TIMES:

		VOA	BNA		Pest.	
Sample ID	Date Sampled	Date Anal.	Date Extr.	Date Anal.	Date Extr.	Date Anal.
DP-5	11/15/94				11/21/94	12/14/94
DP-7	11/15/94	11/25/94	11/17/94	12/20/94	11/21/94	12/14/94
DP-G	11/15/94	· .	11/17/94	12/20/94		
DP-15	11/15/94				11/21/94	12/14/94
DP-15a-1	11/15/94				11/21/94	12/14/94
DP-15a-2	11/15/94				11/21/94	12/14/94
FB-15	11/15/94	11/25/94	11/17/94	12/20/94	11/21/94	12/14/94
TB-15	11/15/94	11/25/94				
SL-02	11/15/94	11/25/94				
SL-17/18	11/15/94	11/25/94				
SL-19	11/15/94	11/25/94				
SL-20	11/15/94	11/25/94				
DP-I	11/15/94	11/25/94	11/17/94	12/20/94	11/21/94	12/14/94
DC-11	11/15/94	11/25/94	11/17/94	12/20/94	11/21/94	12/14/94

VOA: • Unpreserved: aromatics within 7 days, non-aromatics within 14 days of sample collection.

• Preserved: Both within 14 days of sample collection.

• Soils: Both within 10 days of sample collection.

BNA & Pest: • Extracted within 7 days, analyzed within 40 days, soils and water.

Action: If holding times are exceeded all positive results are estimates (J) and non-detects are estimated (UJ). If holding times are grossly exceeded then data unusable (R).

III.	CC/MS	TUNING	(Form	5R)
111.		TUNING		JUI

The DFTPP performance results for semi-volatile analysis were reviewed and found to be within the specified criteria (page D-40/SV).
If no, samples affected:
Tunning passed all SVOC QC criteria
Calculations:
The BFB performance results for volatile organic analysis were reviewed and found to be within the specified criteria (page D-25/VOA) Form 5A.
If no, samples affected:
Passed validation critieria
Calculations:

IVA. VOLATILE CALIBRATION VERIFICATION (Form 6A, 7A)

Date of Initial Calibration: 8/30 + 8/31/94

Dates of Continuing Calibration: 11/25, 11/26/94

Instrument ID: MACH 1
Matrix/Level: Soil/low

Date Criteria Out

Compound (value)

RF, %RSD, %D

8/30 RSD methylene chloride (35.1)

acetone (69.9)

2-butanone (37)

8/31 RSD methylene chloride (45)

acetone (68)

Calculations:

Initial calibration uses 5 concentrations.

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) (page D-27/VOA). All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ)

Some compounds must meet RRF of 0.01 (page D-28/VOA).

IVB. SEMI-VOLATILE CALIBRATION VERIFICATION (Form 6B, 7B)

Date of Initial Calibration: 12/06/94

Dates of Continuing Calibration: 12/20, 12/22/94

Instrument ID:

Matrix/Level: Soil/low

Date

Criteria Out

RF, %RSD, %D

Compound (value)

Passed validation criteria

Calculations:

All Avg. RF's and RF's must be >0.05; if <0.05, mark positive results (J) and non-detects (R) page D-34/SV. All %RSD's must be <30%; if >30% mark detects (J) and non-detects (UJ) if <50% All %D's must be <25%; if >25% mark detects (J) and non-detects (UJ) Tables for RRF, %D, and %RPD on pages D-46,47/SV.

V. BLANK ANALYSIS RESULTS

Laboratory Blanks:

<u>Date</u>

Lab ID

Matrix

Compound

Concentration

All method blank results were non-detect

Equipment and Field Blanks:

<u>Date</u>

Lab ID

Matrix

Compound

Concentration

All field and trip blank results were non-detect

VI. SURROGATE RECOVERIES (Form 2C, 2E)

Sample matrix:

VOA

B/N

Samples

TOL BFB DCF

NBZ FBP TPH PHL 2FP TBP

Pass criteria

Pass criteria

Calculations:

	Water	<u>Soil</u>	
$TOL = Toluene-d_8$	88-110	84-138	Page D-50/VOA
BFB = Bromofluorobenzene	86-115	59-113	
$DCF = 1.2 Dichloroethane-d_8$	76-114	70-121	
$NBZ = Nitrobenzene-d_5$	35-114	23-120	Page D-56/SV
FBP = 2-Flurobiphenyl	43-116	30-115	
TPH = Terphenyl-d ₁₄	33-141	18-137	
PHL,2FP,TBP	60-150	60-150	

VII. FIELD DUPLICATE PRECISION

Sample matrix: soil

Sample Nos.: 15a-1 and 15a-2 PCBs only

List compounds that do not meet the following RPD criteria:

- An RPD of < 30% for water
- An RPD of <50% for soil

Fraction	Compound	Sample Conc.	Dup Conc.	RPD
Soil	aroclor 1254	144	360	85
	aroclor 1260	83	198	82

If the results for any compound do not meet the RPD, then flag positive results as estimated (J).

VIII. INTERNAL STANDARD PERFORMANCE (Form 8A, 8B)

List the internal standard areas of samples that do not meet the criteria of +100% or -50% of the internal standard area on the continuing calibration standard.

Sample ID Date I.S. Out I.S. Area/RT Acceptable Range Action

VOC passed criteria

SVOC passed criteria

Positive results are flagged with (J) Non-detects are flagged with (UJ) Page D-43, 51/SV Page D-47/VOA

IX. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3C)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

<u>Date</u>	Sample No.	Compound	<u>%REC</u>	<u>Limit</u>
11/25/94	DP-7	trichloroethene toluene	1,529 1,835	62-132 59-139
12/20/94	DP-7	1,4-dichlorobenzene N-nitro-di-n-propylamine 1,2,4-trichlorobenzene	4 17 14	28-104 41-126 38-107

f any recoveries < 10%, flag positive results (J), flag non-detects (UJ). RPD for VOAs page D-50/VOA, SV on page D-57/SV, and Pest. on page D-58/pest.

X. PESTICIDE INSTRUMENT PERFORMANCE

List DDT retention times less than 12 minutes.

Standard ID

Date/Time

RT

Samples Affected

Actions

All 4,4-DDT retension times > 12 minutes

If retention time < 12 min., reexamine for good separation, if not flag affected compounds (R)

List compounds which are not within the established windows.

Compound

Date/Time

<u>RT</u>

RT Window

Samples Affected

Must be within 0.02 min. of the mean RT (page D-47/PEST) If out of RT window and no peaks in expected RT window then its ok. If out of RT window and peaks are in expected RT window, recalculate conc. using different STDs.

X. PESTICIDE INSTRUMENT PERFORMANCE (cont.) (Form 7D)

DDT and Endrin Degradation. List the standards which have a DDT or Endrin breakdown > 20%.

Standard ID

DDT or Endrin

% Breakdown

Samples Affected

Passed validation criteria

Calculations:

If breakdown > 20%, flag positive results (J). If DDT is not present but DDD or DDE are, flag (R). Flag all positive results for DDD and/or DDE (J).

If breakdown > 20%, flag positive results (J). If Endrin is not present but endrin aldehyde and/or endrin ketone are, flag (R). Flag all positive results for E. aldehyde and/or E. ketone (J).

XI. SURROGATE RECOVERIES (Form 2F)

Sample matrix:

Column 1

Column 2

Samples

TCX DCB

TCX DCB

Passed validation criteria

Calculations:

OC Limits

TCX = Tetrachloro-m-xylene

60-150

DCB = Decachlorobiphenyl

60-150

XII. PESTICIDE CALIBRATION (Form 6E)

<u>Initial Calibration</u>: Must be calibrated with 3 conc. Calibration factors on page D-41/pest.

RSD on page D-43/pest. RSD ,15% for compounds on page D-43/pest.

List compounds which did not meet RSD < 10% or 15%

<u>Date</u> <u>Compound</u> <u>Mean</u> <u>%RSD</u> <u>Column</u> <u>Samples Affected</u>

Passed validation criteria

Calculations:

Flag all positive results (J)

Analytical Sequence (Form 8D):

Did the lab follow the correct sequence every 72 hours? If no, data may be affected.

Correct sequence followed

XIII. PESTICIDE CALIBRATION (Form 7D, 7E)

Continuing Calibration:

List the compounds which did not meet the %D of <15% on quantitation or 20% on confirmation for continuing calibration.

Date

Compound

%D Column

Sample Affected

Passed validation criteria

IX. GPC and Florisil Clean-Up (Form 9A, 9B)

List compounds which did not use florisil clean-up or surpassed validation criteria:

DateSample No.Compound%RECGPCgamma-BHC
aldrin122
121

QC Limits on florisil %REC = 80-120% QC Limits on GPC %REC = 80-110% If %REC < 80%, qualify positive results (J) and non-detects (UJ). If %REC = 0, then (R) qualify non-detects

XV. MATRIX SPIKE/MATRIX SPIKE DUPLICATE (Form 3F)

Must be performed for each group of samples of a similar matrix following the frequency:

- Each case of 20 field samples
- Each 20 field samples in a case
- Each group of soil samples of a similar concentration.
- Each 14 calendar day period which field samples were received.

List the samples not within RPD:

<u>Date</u> <u>Sample No.</u> <u>Compound</u> <u>%REC</u> <u>Limit</u>

Passed validation criteria



XVI. SAMPLE QUANTITATION

VOA:

BNA:

PEST/PCB:

F:\USERS\RROAT\G&H\VALIDATE\SDG23ORG.MEMO

14

VOA

Surrogates - Passer QL Criteria

SL-17/18 DIE = 103%

196389 : 50 vg/L = 51.57/50 vg/L ×100 = 103%

DPI DL TOL = 100%

273360 x 50g/C = 5.46/5 x100 = 109%

188 = 99 $\frac{137302 \times 5 \frac{1}{2}}{210448 \times 0.854} = 3.82/5 \times 100 = 76.4\%$

Internal Stor - Passes QC (viteria No TIPOS.

ICAL 9/30/94 1256 hrs 1-25 vg/L REFS 7 0.05 RSDS 430% MC = 35 autone = 70

7-bitanone = 37

calculations PRF + RSDs ok

RRFOZ autone = 0.614 12480 x 5 ug/L = 0.614 50478 x 2 x/L Ical 8/3//94 5-100 ug/L RSPS > 0.05 RSDS L30 MC = 45 autore 69 Coloulations RRP x 250 0k PRF75 bromoform = 0.375 557307 x 50 w/L = 0.375 Ccal 11/26/94 00:19 hzs PRF > 0.05 /ps 2 25% RRF 7 Tchene - 1.564 473862 x 5 = 1.564

CCAL 11/25/94 10:10 hr

PRB > 0.05 90Ds 425%

% D Calculated Oh

RRF50 Vingl Chloride - 0.527

83762 x 50 = 0.527 158834 x 50

MS/MSD DR-7
Faded MS Trichloroethem 1,5-29
Tolvene 1,835

MSD Tuchlowethere - 114

mellod blank
VBLK01 OZ are Clean

Field blank = Clean

Trip blank = clean

Field dip 15-1 15-2 PUBS only.

Tuning - Pass Criteria

 $\frac{11|25|94}{287|4751} = 6\%$

Vor Qualityins

DP-1 - Rejut Concentration Trichloro-ethene for Surpassing calibration curve (E)

DP-7 - Samas DP-1

DP-7 DL - J Trichloroutent for poor molimso

SUOC - OK

Pest / PCBs

15a-1 I aroclars 1254+1260 for pour field dup

15 a-2 5 aroclos 1254+1260 Your field dups.

Metals - OK

SDG-23 SVOCS

Surregales NBZ DLB

DP-7 M5 5 4

pll others Pastul QL criteria

DP-4 FBP =47%

 $\frac{8566053 \times 20 \text{ vg/c}}{10526123 \times 0.70} = \frac{23.25 \text{ vg/c}}{50} \times \frac{100=4}{50}$

Internal STDs Plassed QC Crieria - except:

DC PRY = 2763274

DP-9 PRY = 33/2672

DP-7 PRY = 3752001

DP-7 M60 PRY = 2568302

DCRE PRY = 3084444

DP-6 RE PRY = 3701124

DP-7 RE PRY = 3936897

NO TYPOS

ICAL 12/00/94

RRF3 70.05 RSD, L30% = All Pass

RRF + RSDs Calculated Correctly

PRF go chrysene = 1.173

5755628x 20 > 1.173

2466400 × 40

CCAL 12/20 12:59

PRFS > 0.05 90D 125 90D Calculated OK

RRF50 Benzo(a) pyrene = 1.802

 $\frac{28/0782 \times 20}{1347949 \times 25}$ = 1.802

CCal 12/22 14:18

RRFS >0.05 4005 225

900 calculated OK

RRF50 acenaphthene 0,430

3740846 x 20 = 0.430 5095474 x 25

Tuning - Passed Que intonia

 $|W|^2 69 = 47.66$ $|00399|/125774 \times 100 = 47.6$

MS/MSD DP-7 Failed 1, 4-Dichloro benzen 4 % N-Nitroso-di-n-propylamine 17 % 1,2,4-Trichlorobenzene 14% Field dip-only PCBs Method blanks - clean Field blank - clean Past / PCBs

surregates - PasseD QC Criferia

DP-1 TCX, = 70

155350 x 5000 U x 2 GPC = 12.19 2770525 x 2 ul x.73 x31.59

added $\frac{2 \text{ m/x } 0.2}{21.5 \times .73} / 1000 = 17.39$

12.19/17.39 x100 = 70

MS/MSD DP-7 Endrin MSD 46 RPD

Calibration Factors ICAL RSDS & 10 (Cal & 20

DB1701: 44-007 mid = 19475375

155803 / 0.08 ng = 1947537.5

Cal Factores

DB60% PSDS 620 2 6 30%

aldrin = 432 800

43128/0.01 mg = 4312800

RBS

D8 1701 Acoclar 1242 plax $2 = 9 \div 295$ 19657/0.2 ng = 98285

98608 Freelow 1248 = peak 3 = 152925 $30535 \mid 0.2 \text{ ng} = 152925$

Percent Resolution Form 64

Endrin 4,4-DT breakdown 70 RPD 6 25%

Pass

PEMOY DB600

endrin breakdown = 11.88

endrin addelyde: 13207/24/9037.5 -0.0054 endrir Ketone: 21407/3334912.5 -0.0064

0.0054 + 0.0064 × 100 = 11.80

Calledon Verification 75 890 42506

Passed

Analytical sequence - Pass

Florisi Check - Pass

GPC Check

ganna BHC - 122 30-110

Method blanks - Clean Field blank - Clean Field dup: 15a.1 15a-2

anlor 1254 144 360 905

arcolor 1260 33 198 67

REVIEW OF INORGANIC CONTRACT LABORATORY PACKAGE

Case Number: Site Name: Wells G & H Superfund Site

Laboratory: NETL No. of Samples/Matrix: soil

SDG: 23 Reviewer: RETEC

SOW: Reviewer's Name: R. Roat

Completion Date: 1/06/95

DATA ASSESSMENT SUMMARY

		<u>ICP</u>	<u>AA</u>	<u>Hg</u>	<u>Cyanide</u>
1.	Holding Times	O	O	O	O
2.	Calibrations	O	O	O	O
3.	Blanks	O	O	O	Ο
4.	ICS	O	O	O	О
5.	LCS	O	O	O	O
6.	Duplicate Analysis	O	О	O	О
7.	Matrix Spike	X	О	O	О
8.	Serial Dilution	X	-	-	-
9.	Overall Assessment	O	О	O	O

O = Data had no problems or qualified due to minor problems

Action Items:

M = Data qualified due to major problems

Z = Data unacceptable

X = Problems, but do not affect data

I. HOLDING TIMES

Sample ID	Date Sampled	Hg Analysis Date	Cyanide [®] Analysis Date	Metal Analysis Date	Action
FB	11/15/94			11/15/94	
DC	11/15/94			11/15/94	
DC-MS	11/15/94			11/15/94	
DC-MSD	11/15/94			11/15/94	
				·	

Metals - 180 days from collection preserved pH < 2 Mercury - 28 days from collection preserved pH < 2 Cyanide - 14 days from collection preserved pH > 12

If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

II. INSTRUMENT CALIBRATION (Form 2A)

1. Recovery Criteria - List the analytes which did not meet the percent recovery (%R) criteria for initial and continuing calibration.

<u>Date</u> <u>ICV/CCV</u> <u>Analyte</u> <u>%R</u> <u>Action</u> <u>Samples Affected</u>

Passed all validation criteria

Action:

 Accept
 Estimate (J)
 Reject (R)

 Metals:
 90-110%
 75-89%, 111-125%
 <75%, >125%

 Mercury:
 80-120%
 65-79%, 121-135%
 <65%, >135%

 Cyanide:
 85-115%
 70-84%, 116-130%
 <70%, >130%

2. <u>Analytical Sequence</u>

- A. Did the laboratory use the proper number of standards for calibration as described in the SOW? **Yes**
- B. Were calibrations performed at the beginning of each analysis? Yes
- C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis? *Yes*
- D. Were the correlation coefficient for the calibration curves for AA, Hg, and CN- > 0.995?
- E. Was a standard at 2xCRDL analyzed for all ICP analysis? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

100 100 (24)

III. **BLANK ANALYSIS RESULTS (Form 3)**

List the blank contamination.

1. Laboratory Blanks

DATE

ICB/CCB

PREP BL

ANALYTE

CONC.

Passed all validation criteria

2. **Equipment/Trip Blanks:** Not applicable to soils

DATE

EQUIP BL #

ANALYTE

CONC.

No contaminants detected above CRDL

3. **Frequency Requirements**

- Was a preparation blank analyzed for each matrix, for every 20 samples and for each A. digestion batch? Yes
- Was a calibration blank run every 10 samples or every 2 hours? Yes В.

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

III. BLANK ANALYSIS RESULTS (cont)

Actions: Passed validation criteria

The action level for any analyte is equal to five times the highest concentration of that elements contamination in any blank. No positive results should be reported unless the concentration of the analyte exceeds the Action Level (AL).

- 1. When the concentration is greater than the IDL, but less than the AL, report the sample concentration detected with a U.
- 2. When the sample concentration is greater than the AL, report the sample concentration unqualified.

ELEMENT

MAX CONC.

AL UNITS

IV. ICP INTERFERENCE SAMPLE (Form 4)

1. Recovery Criteria

List any element in the ICS AB solution which did not meet the criteria for %R

		Percent F	Recovery
	< 50 %	50-79%	>120%
Positive sample results	R	J	J
Non-detected samples	R	UJ	Α

<u>DATE</u> <u>ELEMENT</u> <u>%R</u> <u>ACTION</u> <u>SAMPLES AFFECTED</u>

Passed all validation criteria

2. Frequency Requirements

A. Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per eight hours? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

IV. ICP INTERFERENCE SAMPLE (cont)

3. Report the concentration of any element detected in the ICS solution > 2xIDL that should not be present.

ELEMENT

CONC. DETECTED IN THE ICS

CONC. OF INTERFERENTS

IN THE ICS

AL CA FE MG

Passed all validation criteria

Estimate the concentration produced by the interfering element in all affected samples.

SAMPLE ELEMENT SAMPLE SAMPLE INTERFERANT ESTIMATED AFFECTED AFFECTED CONC. AL CA FE MG INTERF.

Action:

- 1. The sample data can be accepted without qualification if the sample concentrations of Al, Ca,Fe, and Mg are less than 50% of their respective levels in the ICS solution.
- 2. Estimate (J) positive results for affected elements for samples with levels of >50% or more.
- 3. Reject (R) positive results if the reported concentration is due entirely to the interferant.
- 4. Estimate (UJ) non-detected results for which false negatives are suspect.

V. MATRIX SPIKE (Form 5A)

Sample Number: MS-C

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added SSR - spikes sample result SR - sample result

<u>ANALYTE</u>	<u>SSR</u>	<u>SR</u>	<u>S</u>	<u>%R</u>	<u>ACTION</u>
lead	114.3	0.00	116	98.5	none

Actions:

^{2.} If any analyte does not meet the %R criteria, follow the actions stated below:

	Percent Recovery							
	<u>< 30 %</u>	<u>30-74 %</u>	> 125%					
Positive Sample Results	J	J	J					
Non-Detected Results	R	UJ	A					

2. <u>Frequency Criteria</u>

- A. Was a matrix spike prepared at the required frequency? Yes
- B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? *Not required*

^{1.} If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.

VI. LABORATORY DUPLICATES (Form 6)

List the concentration of any analyte not meeting the criteria for duplicate precision.

ELEMENT	CRDL	SAMPLE #	DUPLICATE #	RPD	<u>ACTION</u>
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper	CADE		BOT EICHTE II	AN IZ	A KORAN
Iron					
Lead		0.00	0.00		none
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					

Action:

- 1. Estimate (J) positive results for elements which have a RPD >20% for water and >35% for soils.
- If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is > CRDL. If both samples are non-detected, the RPD is not calculated (NC).

VII. FIELD DUPLICATES: No duplicates taken

List the concentrations of all analytes in the field duplicate pair. H and X

DUPLICATE # **ELEMENT CRDL** SAMPLE # **RPD ACTION** Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide

Action:

^{1.} Estimate (J) positive results for elements which have a RPD >30% for water and >50% for soils.

^{2.} If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >2xCRDL. If both samples are non-detected, the RPD is not calculated (NC).

VIII. LABORATORY CONTROL SAMPLE (Form 7)

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE

ELEMENT

<u>%R</u> <u>ACTION</u>

SAMPLES AFFECTED

Passed all validation criteria

Action:

	rettent Recovery				
	<u>< 50%</u>	<u>51-79%</u>	<u>>120%</u>		
Positive Results	R	J	J		
Non-Detected Results	R	UJ	Α		

2. Frequency Criteria

A. Was an LCS analyzed for every matrix, digestion batch and every 20 samples? Yes

IX. FURNACE AA ANALYSIS

1. <u>Duplicate Precision</u>

Duplicate injections and one point analytical spikes were performed for all samples, duplicate injections agreed within $\pm 20\%$.

Duplicate injections and/or spikes were not performed for the following samples/elements:

Duplicate injections did not agree within +-20% for samples/elements:

IX. FURNACE AA ANALYSIS (cont.)

2. Post Digestion Spike Recoveries

Spike recoveries met the 85-115% recovery criteria for all samples.

Spike recoveries did not meet the 85-115% criteria but did not require MSA for the following samples/elements:

MSA was used to quantitate analytical results when contractually required.

Correlation coefficients > 0.995, accept results

Correlation coefficients < 0.995, for sample numbers/elements:

Method of standard addition (MSA) was not performed as required for samples/elements:

Actions:

1. Estimate (J) positive results if duplicate injections are outside +-20% RSD or CV.

2. If the sample absorbance is <50% of post digestion spike absorbance the following actions should be applied:

	Percent Recovery					
	<u><10%</u>	<u>11-84%</u>	<u>>115%</u>			
Positive Result	J or R	J	J			
Non-detected	R	UJ	Α			

3. Estimate (J) sample result if MSA was required and not performed.

4. Estimate (J) sample result if correlation coefficient was < 0.995.

X. ICP SERIAL DILUTION ANALYSIS (Form 9)

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

 \underline{X} Serial dilutions were not performed for the following:

Lead: None detected in sample

Serial dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results that do not meet the required laboratory criteria for ICP dilution.

ELEMENT IDL 50xIDL SAMPLE # DUPLICATE # %D ACTION

Aluminum

Barium

Beryllium

Cadmium

Calcium

Chromium

Cobalt

Copper

Iron

Lead

Magnesium

Manganese

Nickel

Potassium

Silver

Sodium

Vanadium

Zinc

Action:

Estimate (J) positive results if %D > 15.

XI. DETECTION LIMITS (Form 10)

1. <u>Instrument Detection Limits</u>

 \underline{X} Instrument detection limit results were present and found to be less than the contract required detection limits (CRDL).

IDLs were not included in the data package

IDLs were present, but the criteria was not met for the following elements:

2. Reporting Requirements

- A. Were sample results on Form I reported down to the IDL not the CRDL for all analytes?

 Yes
- B. Were sample results that were analyzed by ICP for Se, Tl, or Pb at least 5x IDL? Yes
- C. Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I? Yes

If No, the data may be affected. Use professional judgement to determine the severity of the effect and quality of the data.

XII. SAMPLE QUANTITATION

X Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.
 Sample results were beyond the linear range/calibration range of the instrument for the following elements:

1. <u>Sample Calculation:</u>

ICP:

AA Furnace:

Mercury:

Cyanide:

SAMPLE DATA SUMMARY/DATA PACKAGE INORGANICS ANALYSIS: WELLS G&H RD/RA SDG: NETL18-1 WORK ORDER: NETL NETL18-1 PROJECT #: 3-0681-620

Prepared for:

Remediation Technologies, Inc. 9 Pond Lane Concord, MA 01742

Report Date: October 24, 1994

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SDG NARRATIVE

The following samples were received from Remediation Technologies, Inc.:

SAMPLE ID	MATRIX	DATE RECIEVED	рН	ANALYSIS
FB	WATER	31-Aug-94		TAL
SL01	SOIL	31-Aug-94	4.8	TOTAL LEAD
SL03	SOIL	31-Aug-94	5.2	TOTAL LEAD
SL04	SOIL	31-Aug-94	5.5	TAL
SL05	SOIL	31-Aug-94	5.2	TOTAL LEAD
SL6/7	SOIL	31-Aug-94	5.4	TAL
SL08	SOIL	31-Aug-94	4.6	TAL,
SL08MS	SOIL	31-Aug-94	4.6	TAL,
SL08MSD	SOIL	31-Aug-94	4.6	TAL,
SL10/11	SOIL	31-Aug-94	6.0	TOTAL LEAD
SL12	SOIL	31-Aug-94	5.8	TOTAL LEAD
SL13	SOIL	31-Aug-94	5.1	TOTAL LEAD
SL14	SOIL	31-Aug-94	5.5	TOTAL LEAD
SL15	SOIL	31-Aug-94	5.0	TOTAL LEAD
SL25	SOIL	31-Aug-94	5.8	TOTAL LEAD

These fifteen samples constitute Sample Delivery Group NETL18-1.

Custody records for this group follow this narrative.

The acronym "TAL" indicates the EPA TARGET ANALYTE LIST AS DOCUMENTED IN:

Contract Laboratory Program Statement of Work for Inorganics Analysis, USEPA, DOC# ILM03.0 (92/93).

The analytical methods described in the statement of work were used in performing the analysis and the data forms were completed as described in the deliverables section.

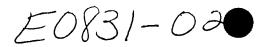
I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness.

Mark H. Bishop Laboratory Director New England Testing Laboratory, Inc

CUSTODY RECORDS

No.	O	7	3
140.	U	,	•

CHAIN OF CUSTODY RECORD



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51-04 51-08 81-08 81-08		12/00	Slia	se R	Scatra	, 54-04	/	X						
8-30-91		2:25	5/0	se la	scation	52-08	1	X						
		2:26	MAT	1/2 571	ike s	lulie location of	/	X						
51-08 10-91 MS	,	2:30	MAY	rix S	sile D	Spliste SL-08	3 /	X						·
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Fax# (508) 369-9279

TECHNOLOGIES INC

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PINK COPY - Sampler

YELLOW COPY - Laboratory

WHITE COPY - RETEC

No.

CHAIN OF CUSTODY RECORD

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5-8-4 9-8-4 9:00 S/da location S/-08 B	1	V					RUSH.	(Next Was)
2.05B 9:05 51-08B mytix 52'Le	1	X					43400	(TOPX) DUPEL
8-4mp 9:10 SL-08BMAX Spile deplicate	1	众		_				
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Relinquished by: (Signature) Date/Time Received by: (Signature)	ire)		Relinqu	ished by	y: (Sig	nature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature) Date/Time Received for laboratory (Signature) REMARKS:	by:		9/9/	Pate/Ti	me	RE	I) FC	REMEDIATION TECHNOLOGIES 9 Pond Lane Damonmill Square
<u> </u>							DIATION LOGIESINC	Concord, MA 01742 (508) 371-1422

(508) 371-1422 Fax# (508) 369-9279

COVER PAGE

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name:	NEW ENG	LAND TESTING LABORATORY	Contract: G&H RD/RA	
Lab Code:	RI 010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
SOW No.:	ILM02	_		
		EPA Sample No. SL-01 SL-03 SL-04 SL-05 SL-6/7 SL-08 SL-08MS SL-08MSD SL-10/11 SL-12 SL-13 SL-14 SL-15 SL-25 FIELD BLANK	Lab Sample ID. SL-01 SL-03 SL-04 SL-05 SL-6/7 SL-08 SL-08MS SL-08MSD SL-10/11 SL-12 SL-13 SL-14 SL-15 SL-25 FIELD BLANK	
Were ICP in	terelement co	orrections applied?	Ye	s/No
Were ICP ba	If yes-were	corrections applied? e raw data generated before of background corrections?		s/NO
Comments:		·		
conditions of than the cond hardcopy dat diskette has designee, as	the contract ditions detaile a package a been authori verified by t	kage is in compliance with the terms, both technically and for completented above. Release of the data containd in the computer-readable data suzed by the Laboratory Manager or the following signature.	ess, for other ained in this bmitted on	
Signature:	mil	AB. A.	Name: Mack H Bis	ihaa

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Date:

SAMPLE DATA

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U.S. EPA - CLP 1

EPA	SAMPL	E NO
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	INORGANIC ANALYSIS DATA SHEET				El A OAMI EL NO.	
Lab Name:	New England	Testing Labor	ratory, Inc.	Contract:	G&H RD/RA	SL-01
Lab Code:	RI010	_				SDG No.: NETL18-1
Matrix (soil/w	vater):	SOIL	Lab	Sample ID: 5	SL-01	_
Level (low/m	ed):	MED	_ Date	Received: 0	08/31/94	_
% Solids:		76.7	_ ,			
	Cor	ncentration U	nits (ug/L or mg/kg o	drv weight):	MG/KG	
		1	Ţ	; ;		-
	CAS No.	Analyte	Concentration	С	Q	<u> M </u>
	7439-92-1	Lead	19.0	!!!		I _P I
				! !		!'
Color Before:	BROWN	-	Clarity Before:		Texture:	MEDIUM
Color After:	YELLOW	_	Clarity After:		Artifacts:	
Comments:						

FORM I - IN

U.S. EPA - CLP

EPA SAMPLE NO.

		INORGAI	NIC ANALYSIS DAT	A SHEET	,	
Lab Name:	New England	Testing Labor	atory, Inc.	Contract:	G&H RD/RA	SL-3
Lab Code:	RI010	_				SDG No.: NETL18-1
Matrix (soil/w	vater):	SOIL	Lab	Sample ID:	SL-3	-
Level (low/m	ed):	MED	_ Date	Received:	08/31/94	_
% Solids: <u>84.2</u>			-			
	Сог	ncentration U	nits (ug/L or mg/kg o	dry weight):	MG/KG	<u>-</u>
	CAS No.	Analyte	Concentration	С	Q	M
	7439-92-1	Lead	125			I _P
			!			
						·
Color Before	BROWN	_	Clarity Before:		Texture:	MEDIUM
Color After:	YELLOW	_	Clarity After:		Artifacts:	
Comments:						

FORM I - IN

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Lab Name: New England Testing Laboratory, Inc.		d Testing Laboratory, Inc.	Contract: G&H RD/RA	SL-04
Lab Code:	RI010			SDG No.: NETL18-1
Matrix (soil/w	rater);	SOIL	Lab Sample ID: SL-04	_
Level (low/me	ed):	LOW	Date Received: 08/31/94	_
% Solids:		88.1		

	Concentration	Units (ug/L or mg/kg	dry weight): _	MG/KG	_
CAS No.	Analyte	Concentration	С	Q	N
7429-90-5	Aluminum	3543	1 1		i P
7440-36-0	Antimony	8,90	U		iP
7440-38-2	Arsenic	3.27			F
7440-39-3	Barium	15.9	! B !	E	1P
7440-41-7	Beryllium	0.16	i v i		iP
7440-43-9	Cadmium	0,62	B		P
7440-70-2	Calcium	544	В		İР
7440-47-3	Chromium	11.9	1 1		iP
7440-48-4	Cobalt	2.34	В		ΪP
7440-50-8	Copper	8.12	<u> </u>	*	i _P
7439-89-6	Iron	6261	!		IP
7439-92-1	Lead	72.7			iF
7439-95-4	Magnesium	879	1	. · · · ·	P
7439-96-5	Manganese	45.4	1		<u> </u>
7439-97-6	Mercury	0.10	Ui		icv
7440-02-0	Nickel	7.03	 		iP
7440-09-7	Potassium	172	В !		ŀР
7782-49-2	Selenium	0,33	B 1	W	İF
7440-22-4	Silver	0,62	U		iP
7440-23 - 5	Sodium	109	В		iΡ
7440-28-0	Thallium	0,16	U		ijF.
7440-62-2	Vanadium	6.56	В		iP
7440-66-6	Zinc	24.7		*	jΡ
	Cyanide	0,20	U	····	,c
	- !		1		$\overline{}$

Color Belore,	BROVIN	Clarity Before:	 l exture;	MEDIUM
Color After:	YELLOW	Clarity After:	 Artifacts:	
Comments;				

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET						
Lab Name:	New England 1	Testing Labor	ratory, Inc.	Contract:	G&H RD/RA	SL-05
Lab Code:	Lab Code: RI010					SDG No.: NETL18-1
Matrix (soil/v	vater):	SOIL	_ Lab S	Sample ID:	SL-05	_
Level (low/m	ed):	MED	Date	Received:	08/31/94	-
% Solids:		85.5	_			
	Cor	centration U	nits (ug/L or mg/kg dı	ry weight): ₋	MG/KG	-
	CAS No.	l Analyte	Concentration	С	Q	М
	7439-92-1	Lead	14.2	1 I I I		lp l
		·	!	<u>: </u>		<u>: :</u>
Color Before	BROWN	-	Clarity Before:		Texture:	MEDIUM
Color After:	YELLOW	-	Clarity After:		Artifacts:	
Comments:						

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Lab Name;	New Englan	nd Testing Laboratory, Inc.	Contract: G&H RD/RA	SL-6/7
Lab Code:	RI010			SDG No,; NETL18-1
Matrix (soil/wa	ater):	SOIL	Lab Sample ID: SL-6/7	
Level (low/me	:d):	LOW	Date Received: 08/31/94	
% Solids:		83.5		

	Concentration	Units (ug/L or mg/kg	dry weight):	MG/KG	
CAS No.	Analyte	Concentration	С	Q	N
7429-90-5	Aluminum	3321	1 1		iP
7440-36-0	Antimony	9.40	U		íΡ
7440-38-2	Arsenic	2.87			F
7440-39-3	Barium	9.07	В	E	IР
7440-41-7	Berylllum	0.16	υ		iP
7440-43-9	Cadmium	0,66	i u		ŀΡ
7440-70-2	Calcium	415	! B !		įР
7440-47-3	Chromium	7,59	i i		I _P
7440-48-4	Cobalt	1.32	B		įΡ
7440-50-8	Copper	4.95	1 1	*	ĺΡ
7439-89-6	Iron	3210			iP
7439-92-1	iLead	8.74	' 		iF
7439-95- 4	Magnesium	714	В		ŀΡ
7439-96-5	Manganese	37.3	1 (ÌР
7439-97-6	Mercury	0.11	i U i		ic\
7440-02-0	Nickel	4.95	В		iΡ
7440-09-7	Potassium	117	В		;P
7782-49-2	Selenium	0.35	! B !	W	ļF
7440-22-4	Silver	0.66	U		iP
7440-23-5	Sodium	101	, B ;		ΙP
7440-28-0	Thallium	0.16	į u į	W	ļF
7440-62-2	Vanadium	5.61	i B i		iΡ
74 40 -66-6	Zinc	16.8	1	*	P
	Cyanide	0.20	U		ic.

Color Before;	BROWN	Clarity Before:	Texture:	MEDIUM
Color After:	COLORLESS	Clarity After:	Artifacts;	
Comments:				

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Lab Name;	New England	d Testing Laboratory, Inc.	Contract;	G&H RD/RA	SL-08
Lab Code:	RI010	· · · · · · · · · · · · · · · · · · ·			SDG No.: NETL18-1
Matrix (soil/w	ater):	SOIL	Lab Sample ID:	SL-08	
Level (low/me	ed);	LOW	Date Received:	08/31/94	
% Solids:		74.1	X.		

Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. **Analyte** С Concentration Q Μ 7429-90-5 **!**Aluminum 5712 ıР 7440-36-0 Antimony 10,6 U Ρ 7440-38-2 Arsenic 11.0 7440-39-3 Barium 20,6 В E 17440-41-7 Beryllium 0.19 ₿ ĭΡ 7440-43-9 Cadmium 0.74 Ū P 7440-70-2 Calcium 480 В ļР 17440-47-3 i Chromium 11.3 iΡ 7440-48-4 Cobalt 1.12 В P 7440-50-8 Copper 15.1 ŀΡ 17439-89-6 Iron 5430 iΡ i7439-92-1 Lead 51.3 iΡ 7439-95-4 Magnesium 419 В ¦Ρ 7439-96-5 Manganese 42.8 7439-97-6 Mercury 0.40 icv 7440-02-0 Nickel 1.86 U P 7440-09-7 Potassium 65,8 U ŀΡ 7782-49-2 Selenium 0.93 16 7440-22-4 Silver 0.74 Ū ĭΡ Sodium 7440-23-5 114 В Ρ 7440-28-0 !Thallium 0.19 Ū İΕ 7440-62-2 iVanadium 18.2 ıΡ 7440-66-6 Zinc 32.9 P Cyanide 0.30 U C

Color Before:	BROWN	Clarity Before:		Texture:	MEDIUM
Color After.	YELLOW	Clarity After:		Artifacts:	
Comments:					
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Matrix (soil/water):

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EPA	SAMPI	LE NO.
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Lab Name:	New England Testing Laboratory, Inc.	Contract: G&H RD/RA	SL-08MS
Lab Code:	RI010		SDG No.: NETL18-1

Lab Sample ID: SL-08MS

Level (low/med): LOW Date Received: 08/31/94
% Solids: 73.0

SOIL

Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. C **Analyte** Concentration Q М 7429-90-5 ıAluminum 7506 7440-36-0 Antimony 111 7440-38-2 Arsenic 19.6 !F 7440-39-3 Barium 651 Ē ıΡ 7440-41-7 Beryllium 16.3 iΡ 7440-43-9 Cadmium 16.4 7440-70-2 Calcium 704 В i7440-47-3 Chromium 81.5 ĬΡ 7440-48-4 Cobalt 165 7440-50-8 Copper 88.1 ļβ 7439-89-6 Iron 5761 1P 7439-92-1 Lead 209 iΡ 7439-95-4 Magnesium 524 В 7439-96-5 Manganese 205 i7439-97**-**6 Mercury 1.89 **ICV** 7440-02-0 Nickel 168 iΡ 7440-09-7 Potassium 170 ŀР В 7782-49-2 Selenium 5.72 IF Silver 7440-22-4 13.6 iΡ 7440-23-5 Sodium 121 В 7440-28-0 Thallium 9,95 7440-62-2 i Vanadium 186 īΡ 7440-66-6 Zinc 184 iΡ Cyanide 36.4 <u>:C</u>

Color Betore;	BROWN	Clarity Before:	Texture:	MEDIUM
Color After:	YELLOW	Clarity After:	Artifacts:	
Comments:				
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EPA	SAMPL	E NO
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Lab Name: New En	ngland Testing Laboratory, Inc.	Contract: G&H RD/RA	SL-08MSD
Lab Code; RI010			SDG No.: NETL18-1
Matrix (soil/water):	SOIL	Lab Sample ID: SL-08MSD	····
Level (low/med):	LOW	Date Received: 08/31/94	-
% Solids;	76.7		

	Concentration	Units (ug/L or mg/kg	dry weight):	MG/KG	
CAS No.	Analyte	Concentration	С	Q	М
7429-90-5	Aluminum	6470	1 1		1P
7440-36-0	Antimony	10.2	U		iΡ
7440-38-2	Arsenic	10.2	1		į _F
7440-39-3	Barium	21.3	! B !	Е	įΡ
7440-41-7	iBeryllium i	0.18	В		⊢iP
7440-43-9	Cadmium	0.72	U		ŀΡ
7440-70-2	Calcium	320	. B !		įР
7440 -4 7-3	Chromium	11.3	i i	·	IР
7440-48-4	Cobalt	1.26	В		iP
7440-50-8	Copper	11.7	 	•	- ip
7439-89-6	Iron	5448	i i		ip.
7439-92-1	Lead	41.8		····	iΡ
7439-95-4	Magnesium	432	i B i		iΡ
7439-96-5	Manganese	40.9	1		IР
7439-97-6	Mercury	0,35	1 1		icv
7440-02-0	Nickel	3.59	В		iΡ
7440-09-7	Potassium	63.5	; 0 ;		İР
7782-49-2	Selenium	0,96	! B !		F
7440-22-4	Silver	0.72	Ü		iP
7440-23-5	Sodium	91.6	В	····	ΪP
7440-28-0	Thallium	0.18	U	,	F
7440-62 - 2	Vanadium	18.1	 		iΡ
7440-66-6	Zinc	26.5	1	*	iΡ
	Cyanide [0.30	U		ic
			! !		i

Color Before:	BROWN	Clarity Before:	Texture:	MEDIUM
Color After.	YELLOW	Clarity After:	Artifacts:	
Comments:				
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EPA SAMPLE NO.

		INORGA	NIC ANALYSIS DATA	SHEET		
Lab Name:	New England	Testing Labor	atory, Inc.	Contract:	G&H RD/RA	SL-10/11
Lab Code:	RI010	_				SDG No.: NETL18-1
Matrix (soil/w	vater):	SOIL	Lab S	ample ID:	SL-10/11	-
Level (low/m	ed):	MED	Date	Received:	08/31/94	-
% Solids:		66.0	_			
	Co	ncentration Ui	nits (ug/L or mg/kg dr	y weight):	MG/KG	-
	CAS No.	Analyte	Concentration	С	Q	M
	i 7439-92-1	Lead	10.2	i !	! !	I I
		1		<u> </u>		
Color Before	BROWN	_	Clarity Before:		Texture:	MEDIUM
Color After:	YELLOW	<u>-</u>	Clarity After:		Artifacts:	-
Comments:						

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EPA SAMPLE NO.

Lab Name: New England Testing Laboratory, Inc. Co				Contract:	G&H RD/RA	SL-12
Lab Code:	RI010					SDG No.: NETL18-1
Matrix (soil/water):		SOIL	Lab S	_		
Level (low/m	ed):	MED	Date	_		
% Solids:		85.7	-			
	Cor	ncentration Ur	nits (ug/L or mg/kg d	ry weight):	MG/KG	_
	CAS No.	Analyte	Concentration	С	Q	M
	7439-92-1	Lead	229	1 ! !	1 1 1	i i
		<u> </u>	•	•		
Color Before	: BROWN		Clarity Before:		Texture:	MEDIUM
Color After:	YELLOW	-	Clarity After:		Artifacts:	
Comments:						

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U.S. EPA - CLP

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET									
Lab Name:	New England Testing Laboratory, Inc. Contract: G&H RD/RA				G&H RD/RA	SL-13			
Lab Code:	RI010					SDG No.: NETL18-1			
Matrix (soil/water):		SOIL	Lab Sample ID: SL-13			_			
Level (low/med):		MED	Date Received: 08/31/94			_			
% Solids:		-							
Concentration Units (ug/L or mg/kg dry weight):MG/KG									
	CAS No.	Analyte	Concentration	С	Q	М			
	7439-92-1		66.6			P			
	1	!	<u> </u>			1 1			
			•						
Color Before	BROWN	-	Clarity Before:		Texture	MEDIUM			
Color After:	YELLOW	<u>'</u>	Clarity After:		Artifacts:				

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Comments:

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		IIC ANALYSIS DAT						
New England T	ngland Testing Laboratory, Inc. Contract: G&H RD/			G&H RD/RA	SL-14			
RI010					SDG No.: NETL18-1			
Matrix (soil/water):		Lab	Sample ID:	SL-14	-			
d):	MED	Date Received: 0		08/31/94	-			
	80.6				•			
Concentration Units (ug/L or mg/kg dry weight):MG/KG								
CAS No.	Analyte	Concentration	С	Q	M			
7439-92-1	Lead	58.1	 	L	l _P			
			•	<u>:</u>	i i			
BROWN		Clarity Before:		Texture:	MEDIUM			
YELLOW		Clarity After:		Artifacts:				
	RI010 ter): d): Con CAS No. 7439-92-1	SOIL MED 80.6	ter): SOIL Lab s d): MED Date 80.6 Concentration Units (ug/L or mg/kg of the concentration) CAS No. Analyte Concentration 7439-92-1 Lead 58.1	ter): SOIL Lab Sample ID: d): MED Date Received: 80.6 Concentration Units (ug/L or mg/kg dry weight): CAS No. Analyte Concentration C 7439-92-1 Lead 58.1 BROWN Clarity Before:	SOIL Lab Sample ID: SL-14			

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EPA SAMPLE NO.

		INORGAI	NIC ANALYSIS DATA	A SHEET		
Lab Name:	New England	Testing Labor	atory, Inc.	Contract:	G&H RD/RA	SL-15
Lab Code:	RI010	_				SDG No.: NETL18-1
Matrix (soil/w	vater):	SOIL	Lab S	Sample ID:	SL-15	_
Level (low/m	ed):	MED	Date	Received:	08/31/94	_
% Solids: 90.9						
	Co	ncentration U	nits (ug/L or mg/kg d	ry weight):	MG/KG	_
	CAS No.	Analyte	Concentration	С	Q	M
	7439-92-1	Lead	24.2	1		1 ! !P !
		<u>:</u>	<u>.</u>			<u></u>
Color Before	BROWN	_	Clarity Before:		Texture:	MEDIUM
Color After:	YELLOW	_	Clarity After:		Artifacts:	
Comments:						
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U.S. EPA - CLP 1 INORGANIC ANALYSIS DATA SHEE

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET							
Lab Name:	New England	Testing Labor	atory, Inc.	Contract:	G&H RD/RA	SL-25	
Lab Code:	RI010	_				SDG No.: NETL18-1	
Matrix (soil/v	Matrix (soil/water): SOIL Lab Sample ID: SL-25					<u>-</u>	
Level (low/m	ed):	MED	Date	Received:	08/31/94	-	
% Solids:		85.0	-				
	Concentration Units (ug/L or mg/kg dry weight):MG/KG						
	CAS No.	Analyte	Concentration	С	Q	M	
	7439-92-1	Lead	161	 		i i ip i	
						1	
Color Before	BROWN	_	Clarity Before:		Texture:	MEDIUM	
Color After:	YELLOW	-	Clarity After:		Artifacts:		
Comments:							

U.S. EPA - CLP 1 INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name:	New England	Testing Laboratory, Inc.	Contract:	G&H RD/RA	FIELD BLANK
Lab Code:	RI010	-			SDG No.: NETL18-1
Matrix (soil/w	vater):	WATER	Lab Sample ID:	FIELD BLANK	
Level (low/m	ed):	LOW	Date Received:	08/21/94	
% Solids:		0.0			

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	С	Q	ļМ
7429-90-5	Aluminum	38.01	Ü	 	i _P
7440-36-0	Antimony	57.0	U		¦Ρ
7440-38-2	Arsenic	2.0!!	U		ļF
7440-39-3	Barium	1.0	U		- P
7440-41-7	Beryllium !	1.0!!	U		ļР
7440-43-9	Cadmium	4.0i i	U		iР
7440-70-2	Calcium	138.0	В		ŀР
7440-47-3	Chromium	3.01 !	U		iΡ
7440-48-4	Cobalt	6.0	U		Р
7440-50-8	!Copper [4.0!!	U		!P
7439-89-6	ilron	15.01 i	В		iР
7439-92-1	Lead	4.0			¦F
7439-95-4	Magnesium	10.01 1	В		iΡ
7439-96-5	Manganese	1.0	U		ΙP
7439-97-6	Mercury	0.2! !	Ü		¦C\
7440-02-0	Nickel	10.0i i	U		iР
7440-09-7	Potassium	354.0	U		ŀΡ
7782-49-2	Selenium	2.01 !	U		ļЕ
7440-22-4	Silver	4.0	U		Р
7440-23-5	¦Sodium [697.0!!	В		ŀР
7440-28-0	iThallium [1.0i i	U		iF
7440-62-2	¦Vanadium [3.0	U		¦Ρ
7440-66-6	Zinc	6.01 1	В		įР
	Cyanide	2.0	U		C

Color Before:	COLORLESS	Clarity Before:	<u>CLEAR</u> Texture:	
Color After:	COLORLESS	Clarity After:	CLEAR Artifacts:	
Comments:				

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INORGANIC	ANAL VS	IS DATA	SHEET

EPA	SAMPL	E NO
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		INORGANIC ANALYSI	S DATA SHEET	
Lab Name:	New England	Testing Laboratory, Inc.	Contract: G&H RD/RA	PBW
Lab Code:	RI010	-		SDG No.: NETL18-1
Matrix (soil/w	vater):	WATER	Lab Sample ID: PBW	-
Level (low/m	ed):	LOW	Date Received: 08/21/94	-
% Solids:		0.0		

Concentration Units (ug/L or mg/kg dry weight): UG/L CAS No. Analyte Concentration С Q Μ¦ 7429-90-5 38.0i i iP Aluminum U 7440-36-0 57.0 U Antimony 2.0011 U ıF 17440-38-2 1Arsenic 7440-39-3 Barium 1.00 U Ρ !7440-41-7 Beryllium 1.00!! U iΡ 7440-43-9 Cadmium 4.00i i U ŀР 7440-70-2 Calcium 42.0 В iΡ 17440-47-3 Chromium 3.001 1 U Р 7440-48-4 Cobalt 6.00¦ U Ū ΙP !7440-50-8 !Copper 4.00! iΡ 7439-89-6 ilron 6.00 В 1.00 7439-92-1 Lead U F iΡ 17439-95-4 Magnesium 8.0011 В P 1.00 υ 7439-96-5 Manganese 17439-97-6 !Mercury 0.20!! U !CV! 7440-02-0 U iΡ Nickel 10.0i i Potassium <u>'P</u> 354 U 7440-09-7 7782-49-2 Selenium 2.00!! U ΙF P 7440-22-4 Silver 4.00 U ŀР 17440-23-5 !Sodium 308!! В Ū iF 7440-28-0 Thallium 1.00i i ŀΡ 3.00 7440-62-2 Vanadium U i7440-66-6 4.0011 В iΡ **IZinc** Cyanide 2.00 U Ü

		·····		
Comments:				
Color After:	COLORLESS	Clarity After:	CLEAR Artifacts:	
		•		
Color Before:	COLORLESS	Clarity Before:	CLEAR Texture:	

U.S. EPA - CLP 1 INORGANIC ANALYSIS DATA SHEET

EPA	22	MP		NO
	2	שואו	ᅩᄃ	140

Lab Name:	New Engla	nd Testing Laboratory, Inc.	Contract: G&H RD/RA	PBS01
Lab Code:	RI010	·········		SDG No.; NETL18-1
Matrix (soil/w	rater):	SOIL	Lab Sample ID; PBS01	_
Level (low/me	ed):	LOW	Date Received: 08/31/94	_
% Solids:		100.0		

	Concentration	Units (ug/L or mg/kg	dry weight):	MG/KG	
CAS No.	Analyte	Concentration	С	Q	М
7429-90-5	Aluminum	5.21	U		i _P
7440-36-0	Antimony	7.81	U		iΡ
7440-38-2	Arsenic	0,28	; U ;	***************************************	;F
7440-39-3	Barium	0.14	i u i	E	įΡ
7440-41-7	Beryllium	0.14	U		iP
7440-43-9	Cadmium	0.55	; U ;		įΡ
7440-70-2	Calcium	5.48	! B !	**	ŀР
7440-47-3	Chromium	0.41	i U i		iΡ
7440-48-4	Cobalt	0.82	i u i		iΡ
7440-50-8	Соррег	0.55	; U ;	*	ļΡ
7439-89-6	Iron	3.15	! B !	·	iΡ
7439-92-1	iLead	0.14	i U i		iF
7439-95-4	Magnesium	1.92	В ;		¦Ρ
7439-96-5	Manganese	0,14	U		İР
7439-97-6	Mercury	0.09	iui		icV
7440-02-0	Nickel	1.37	U		P
7440-09-7	Potassium	48,5	U		ŀР
7782-49-2	Selenium	0.28	U		·iF
7440-22-4	Silver	0.55	U		P
7440-23-5	Sodium	73,3	В		P
7440-28-0	Thallium	0.14	U		ļF.
7440-62-2	Vanadium	0.41	i U i		iΡ
7440-66-6	Zinc	0.55	U		iP
	Cyanide	· · · · · · · · · · · · · · · · · · ·	<u> </u>		ij
			i i		1

Color Before:	YELLOW_	Clarity Before:		Texture:	MEDIUM
Color After:	COLORLESS	Clarity After.		Artifacts;	
Comments:			٠		
			······································		

0028

U.S. EPA - CLP 1 INORGANIC ANALYSIS DATA SHEET

	EPA	SAMPL	LE NO
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Lab Name:	New England	Testing Labor	ratory, Inc.	Contract:	G&H RD/RA	PBS01
Lab Code:	RI010		•	-		SDG No.: NETL18-1
Matrix (soil/v	vater):	SOIL	_	Lab Sample ID	: PBS01	_
Level (low/m	ied):	MED	_	Date Received:	08/31/94	-
% Solids:		100.0	_			
		Concentra	tion Units (ug/L or m	ng/kg dry weight):	MG/KG	_
	CAS No.	Analyte	Concentration	С	Q	! M !
	7439-92-1	Lead	5.21	U	 	i i IP I
		!	I	1	!	1 1
Color Before	COLORL	Ess	Clarity Before:	CLEAR	Texture:	
Color After:	COLORL	ESS	Clarity After:	CLEAR	_ Artifacts:	
Comments:				•	·	

FORM I - IN

B: QC DATA

Lab Name:	New England Testing	g Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-</u>
Initial Calib	ration Source:	LEEMAN		
Continuing	Calibration Source:	SPEX		

Concentration Units: ug/L

Analyte	_	Initial Calibration			Continuing Calibration				
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	М
Aluminum	20010.0	19620.00	98.1	10000.0	10340.00	103.4	10150.00	101.5	Р
Antimony 📘	!					1			
Arsenic [i		i	i		ł	1		
Barium [l l		l		l i	
Beryllium [i		i	i	i	i	i	ii	
Cadmium [1								
Calcium [500000.0!	489500.00	97.9!	250000.0!	259000.00	103.6	269700.00!	107.9!!	Р
Chromium [I I	i				ii	
Cobalt			1	!				7.	
Copper	2503.01	2297.00	91.8	1250.01	1298.00	103.8	1281.00	102.511	P
Iron [10020.0	9874.00	98.5	5000.0	4965.00	99.3	4764.00	95.3	Р
Lead [1]			!		
Magnesium [3000.0i	2845.00		250000.0i	247600.00	99.0i	243500.00	97.411	Р
Manganese [500000.0	475500.00	95.1	1500.0	1543.00	102.9	1493.00	99.5	P
Mercury	!		Į į	1	!	!		11	
Nickel	i	i	i i	<u> </u>	i	i	<u>i</u>	ii	
Potassium	500000.0	484900.00	97.0	250000.0	249600.00	99.8	241200.00	96.5	Р
Selenium	i		1			i	i	ii	
Silver [
Sodium [500100.0	494500.00	98.9	250000.0	254100.00	101.6	248500.00	99.4	Р
Thallium 📋	i		i	i		i	i	ii	
Vanadium [f	T			
Zinc		1	1			ļ		11	
Cyanide [1		i			1	1		

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 1 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	g Laboratory, inc.	Contract: G&H I	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-
Initial Calibi	ration Source:	LEEMAN		
Continuing	Calibration Source:	SPEX		

Concentration Units: ug/L

I 1	11	nitial Calibrat	ion	(Continuing C	alibration		11	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum			1 1	10000.0	10060.00	100.6		 	Р
Antimony [!	!!	!		ı		1 11	
Arsenic [1 1					1	
Barium 📙		1		1				1 11	
Beryllium 🗀		Ĭ	i i	i		i		i ii	
Cadmium [I				T I		<u> </u>	
Calcium [!	!!!	250000.0!	275300.00	110.1		1	Ρ
Chromium 🗌		i	i	i		i		i ii	
Cobalt [1		I				1	
Copper		ı	1 1	1250.0	1277.00	102.21		1 11	Р
Iron		1	1 1	5000.0	4745.00	94.9			Р
Lead 🗀		1	1 1					1	
Magnesium 🗌		i	i i	250000.0i	245300.00	98.1		i li	Р
Manganese 🛴		1	1 1	1500.0	1512.00	100.8		1 1	Р
Mercury		i	1 1	!	·	1		1 1	
Nickel		<u>.</u> I	<u>i i</u>	i		<u>i</u>		<u>i i i</u>	
Potassium [] 		250000.0¦	239400.00	95.8			Р
Selenium 📃		I	1 1	ı		i		1 11	
Silver		<u> </u>				<u> </u>		<u> </u>	
Sodium [I.		250000.0	245500.00	98.2			Р
Thallium 🗌		i	i	i				<u>i ii</u>	
Vanadium 📗		1	<u> </u>					1 1 1 L	
Zinc _		1	!!!	!		ı		! !!	
Cyanide 🗐		1	1 1	i				1	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 2 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	g Laboratory,	Inc.	D/RA		
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: <u>NETL18-1</u>	
nitial Calibration Source:			SPEX			
Continuing	Calibration Source:		JOHNSON & MATHEWS			

Concentration Units: ug/L

Analyte	Init True	ial Calibratio Found	%R(1)	True	Continuing C Found	alibration %R(1)	Found .	%R(1)	М
Aluminum _	10000	1000.00	100.0	5000.0	5454.00	100.0	5200.00	400.01	Р
Antimony L	1000.01	1026.00	102.61	5000.0	5151.00	103.01	5309.00	106.2	P
Arsenic _	<u>_</u>			<u> </u>		<u> </u>			
Barium			ļ			<u> </u>		———	
Beryllium i	1		1			1	I		
Cadmium [<u>i i </u>	i		نــــــــــــــــــــــــــــــــــــــ	<u> </u>		
Calcium [!		 	I		 	···		
Chromium _	i		į	i		<u>i i</u>	i		
Cobalt			 	1		 	1		
Copper			<u> </u>	1		1	1		
Iron _	<u>_</u>		<u> </u>	i i		<u>i i</u>	i	ii	
Lead L						<u> </u>		 	
Magnesium i	i		<u>i i</u>	i		i i	i	11	
Manganese [! ! !	1		
Mercury	1		1			l		11	
Nickel	i		<u>i</u> i	i		<u>i i</u>	i		
Potassium			i i						
Selenium 🗍	i		į			i i		11	
Silver	. 1		1			<u> </u>			
Sodium !			!			<u> </u>			
Thallium [i		i			i		ii	
Vanadium 📙	I I		I I			11			
Zinc	ı		i i	1		<u> </u>	1	!!	
Cyanide			 	·				11	
i	<u>i</u>		i			<u> </u>	İ	1	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 1 OF 2

FORM II (PART 1) - IN

Lab Name: New England Testing Laboratory		Laboratory,	Inc.	Contract: <u>G&H</u>	RD/RA	
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: NET	L18-1
Initial Calibration Source:			SPEX			
Continuing Calibration Source:			JOHNSON & MA	THEWS		

Concentration Units: ug/L

Analyte	lı True	nitial Calibrat Found	ion %R(1)	True	Continuing C Found	alibration %R(1)	Found	ı	! M
Aluminum		1						I	
Antimony		<u> </u>		5000.01	5190.00	103.8		1 1	
Arsenic		<u>!</u>						1 1	L
Barium			<u> </u>					 	<u> </u>
Beryllium		1	1 1			<u> </u>		<u> </u>	
Cadmium		<u>i </u>	<u>.ii</u> .	i				<u> </u>	<u></u>
Calcium		<u> </u>	1 1	<u> </u>				 	!
Chromium			1	<u> </u>		<u> </u>		<u> </u>	
Cobalt		!	<u> </u>	<u>.</u>				<u> </u>	[
Copper		1	1 1	!		1		1	<u> </u>
Iron		<u>į</u>	<u>i i</u>	<u> </u>				<u> </u>	
Lead		! }	 	!		 		<u> </u>	<u> </u>
Magnesium		1	1 1	<u>t</u>				1	
Manganese		i	<u> </u>	<u>t</u> _				11	
Mercury		!	<u> </u>			<u> </u>			
Nickel	<u>-</u>	<u>i</u>	<u>i i</u>	<u> </u>		i		1 1	1
Potassium		l 	<u> </u>	<u> </u>		 	18.01.0.5	l	!
Selenium		!	1 1	!		l l		! ! !	
Silver		i	i	<u>.</u>		<u> </u>		L	
Sodium		<u> </u>	<u> </u>	<u>.</u>				I I	[
Thallium		i	i i	i		i		<u>i i</u>	
Vanadium [l I							
Zinc		1		!		!			
Cyanide		1		i		i		1 	1
I I								J	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 2 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testin	g Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>
Initial Calibr	ration Source:	LEEMAN		
Continuing (Calibration Source:	SPEX	<u>.</u>	,

Concentration Units: ug/L

Analyte	Init True	ial Calibratio Found	%R(1)	True	Continuing C Found	alibration %R(1)	Found	%R(1)	N
Aluminum							t		
Antimony L						 			
Arsenic	20010.0	19990.00	99.9!	10000.0	10330.00	103.3	10570.00	105.7	P
Beryllium i	20010.0	19990.00	33.3	10000.0	10000.00	100.0	10070.00		
Cadmium				+		' '		i-	
Calcium 1	<u></u>					<u> </u>	 		
Chromium _						-	-		
Cobalt			 	-				i	
Copper	+		<u> </u>			 	<u>1</u>		
Iron	- 1			1		 	1	11	
Lead	i			i i		<u> </u>	<u> </u>	ij-	
Magnesium i				1			······································		
Manganese [1			· · · · · · · · · · · · · · · · · · ·				11	
Mercury	1	i	į	1			!		
Nickel	i		i	i	·		i	ii	
Potassium 📙				1				i i	
Selenium 📃	i		i			i	i	ii	
Silver [1		
Sodium 📙			- !						
Thallium 📘			i	i		<u>i</u>	i		
Vanadium 📙						<u> </u>		 	
Zinc	<u> </u>	·	<u> </u>	<u> </u>		! ! 			
Cyanide _	i	i	<u>i</u>	<u> i </u>		<u>i i</u>	i		

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 1 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>
Initial Calibi	ration Source:	LEEMAN		•
Continuing	Calibration Source:	SPEX		

Concentration Units: ug/L

1		nitial Calibrat	•		Continuing C				
An <u>a</u> lyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum		I	1 i						
Antimony 📘		l		1		1		1	
Arsenic 🗀		! !	<u>i i</u>	i_		i		<u>i </u>	
Barium [! !		10000.0	10620.00	106.2		1 11	P
Beryllium <u>i</u>		I	<u>i i </u>	i	i	i		1 11	
Cadmium 🗌		l	<u> </u>	<u>i</u> _		<u> </u>			
Calcium 📃		I	1 !	!					
Chromium 📙		i	i i	i		i		<u>i i i i i i i i i i i i i i i i i i i </u>	
Cobalt		i	1 1	1					
Copper			1 1	į.	l	i i		i li	
lron 🗀		! !		i		<u> </u>		<u>i i i i i i i i i i i i i i i i i i i </u>	
Lead [i	1						
Magnesium 📋		i	i i	<u>i</u>	ì	i		<u>i ii</u>	
Manganese 🗌		l I		1				1	
Mercury 🗀		! -	! !	I.		1			
Nickel [!	i i	i	i	<u>i</u>		<u>i ii</u>	
Potassium 🗧		l 1		I					
Selenium 🗌		i	1 1	i		i		<u>i 11</u>	
Silver			1 1					1	
Sodium 📙		l 	1 1	1				11	
Thallium 🗀		i	i i	i		i		i i	
Vanadium 📙		1	1 1						
Zinc		!	1 1	Ţ.				1	
Cyanide 🗀		i –	i			i		1 11	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 2 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory, Inc.	Contract: G&H R	D/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>
Initial Calibr	ration Source:	LEEMAN	<u></u>	
Continuing (Calibration Source:	SPEX		

Concentration Units: ug/L

Analyte	Init True	tial Calibration Found	on %R(1)	C True	Continuing C Found	alibration %R(1)	Found	%R(1)	М
Aluminum			j	·	l		I	i	
Antimony				ļ.	Į.	<u>!</u>	<u>!</u>	!	
Arsenic	i		<u> i </u>	i_		<u> </u>			
Barium			 	1		1			
Beryllium i_	500.0i	507.50		250.0 i	258.80		253.10i	101.2ii	Р
Cadmium	5010.0	4928.00	98.4	2500.0¦	2563.00	102.5	2522.00	100.9	Р
Calcium L	!		l I	1		<u> </u>		11	
Chromium _	2046.0	1937.00		1000.0	1053.00	105.3	1053.00	105.3	Р
Cobalt	5006.0	4870.00	97.3	2500.0	2685.00	107.4	2645.00	105.8	Р
Copper	l l		1	<u> </u>	!		<u> </u>	ii	
Iron	i		i	<u> </u>	i	i_	<u></u> i		
Lead			1	1	 1	·		11 1b	
Magnesium i_			İ	i		i		<u> </u>	
Manganese [<u>i</u> _		<u> </u>			i_	<u> </u>		
Mercury	<u> </u>		- I	1	 				
Nickel	8000.0	7763.00	97.0	4000.0	4198.00	105.0	4139.00	103.5	Р
Potassium L				<u>.</u>					
Selenium		I		1	!				
Silver	<u>i</u>	<u>-</u>	<u> </u>	<u>i</u>	i	<u>i</u>	i	<u>i</u>	
Sodium _								—————————————————————————————————————	
Thallium	5001.01	101000	1 00.01	1	<u> </u>	105 51	1		
Vanadium _	5001.0	4813.00		2500.0	2643.00		2669.00¦	106.8	<u> P</u>
Zinc :	3998.0	3734.00	93.4	2000.01	2039.00	102.01	2006.00	100.311	<u> P</u>
Cyanide	!		<u> </u>	<u> </u>		<u></u>	<u> </u>		

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 1 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory, Inc.		Contract: G&H RD/RA			
Lab Code:	RI010	Case No.: E083	1-02	SAS No.:	SDG No.: <u>NETL18-</u>		
Initial Calibr	ration Source:	LEEM	IAN				
Continuing	Calibration Source:	SPEX	(<u>.</u>			

Concentration Units: ug/L

1	Ir	nitial Calibrat	ion	C	Continuing C	alibration		11 11	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum		I 1		I .					
Antimony <u>I</u>		1	1 1	1		!		1 11	
Arsenic		1	<u>i i </u>	i_		<u> </u>		<u>ii</u>	
Barium L		l 1	<u> </u>	I					
Beryllium i		<u>i</u>	<u>i i i </u>	250.0 i	258.70			<u>i ii</u>	Р
Cadmium [1 1	1 1	2500.0	2568.00	102.7		1	Р
Calcium		ı	1 !	1		l I			
Chromium [i	i	1000.0	1059.00			<u>i ii</u>	Р
Cobalt		1		2500.0	2694.00	107.8			Р
Copper i		1	i i	İ		<u> </u>		1 11	
Iron [1	<u>i i i </u>	i		<u> </u>		<u>i i i </u>	
Lead _		1	1 1			! !		1 11	
Magnesium 📃		i	<u>i i</u>	i		i		i ii	
Manganese [! !	<u> </u>	i L					
Mercury		ļ	1 1	<u> </u>	i	1		11	
Nickel		<u>i </u>	<u>i i</u>	4000.0	4217.00	105.4		<u>i ii</u>	Р
Potassium 📙		1 L	· I	!				1 11	
Selenium 📃		i	<u>i i</u>	i		i		i ii	
Silver _		<u> </u>	<u>i i </u>	<u>i</u> _		 		<u> </u>	
Sodium [ŀ	1 1	1				11	
Thallium i		<u>i</u>	<u>i i</u>	i		<u>i i</u>		<u>i ii</u>	
Vanadium _		1		2500.0	2689.00				Р
Zinc		!	!!!	2000.01	2062.00	103.1		1 11	Р
Cyanide [i	1 1			i]	
		!	1	1		I I		1 11	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 2 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory,	Inc.	Contract: G&H RD/RA	1
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: NETL18-
Initial Calibr	ation Source:		LEEMAN		
Continuing (Calibration Source:		SPEX		

Concentration Units: ug/L

Analyte :	Init True	tial Calibration Found	on	True	Continuing C Found	alibration %R(1)	Found	%R(1) !!	М
			i			, <u>.</u>		- 11	
Aluminum _	<u>i</u>		<u> </u>	<u>.</u>		<u> </u>			
Antimony			ļ				· · · · · · · · · · · · · · · · · · ·		
Arsenic	1		1			<u> </u>	<u> </u>		
Barium [<u>i</u>		<u> </u>			<u> </u>		i	
Beryllium	-		<u> </u>	<u> </u>			I		
Cadmium [<u> </u>		i i			<u> </u>		i_	
Calcium									
Chromium _	+					1			
Cobalt				i			i		
Copper				<u></u>		l	<u> </u>		
ron			1000	<u> </u>		<u> </u>	i		
_ead _	5000.0	5000.00	100.0	2500.0	2648.00	105.9	2552.00	102.1	Р
Magnesium [-	1						
Manganese [i		<u> i </u>	i		ii.	i		
Mercury _								11	
Vickel	!		<u> </u>			1	!		
Potassium 📙						L			
Selenium			1	l l		1			
Silver	i		i	i		i i	i	i	
Sodium _							I		
hallium		ļ	İ	<u> </u>		ļ <u>.</u>	l l		
/anadium 🗌	i		<u> </u>			<u> </u>	i		
Zinc			l l	<u> </u>		<u> </u>	<u>!</u>		
Cyanide								11	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 1 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testin	ng Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-
Initial Calibra	ation Source:	LEEMAN		
Continuing C	Calibration Source:	SPEX		

Concentration Units: ug/L

Analyte	In True	itial Calibrat Found	ion	True	Continuing C Found	alibration %R(1)	Found	%R(1)	М
Aluminum			1 1			1 1			
Antimony			1 1						
Arsenic		<u> </u>	<u> </u>			<u>i i</u>		<u> </u>	
Barium		<u> </u>	1 1	l		<u> </u>		[]	
Beryllium			<u>i i</u>			i i		ii	
Cadmium			<u> </u>			<u> </u>			
Calcium		 	1 1	J				II	
Chromium			<u>i i</u>	i		<u>i i</u>	i		
Cobalt		ļ	1 1			<u> </u>		!	
Copper			1 1			I I			
lron į			<u>i i</u>			<u>i i</u>	i		
Lead ¦			1 1	2500.0	2533.00	101.3	2452.00	98.1	Р
Magnesium į			1 1			<u> </u>	·····		
Manganese [<u>i i</u>	i		<u>i i</u>	i		
Mercury		<u> </u>	<u> </u>			! ! ! 			
Vickel			+ +			<u> </u>		11	
otassium {			<u>i i </u>			<u>i i</u>		i	
Selenium			 						
Silver			 	<u> </u>		 			
Sodium			 			-		———ii	
Thallium			<u> </u>	<u> </u>		1 1 1 1	<u> </u>	11	
Vanadium [<u> </u>	 			<u> </u>	i		
Zinc I						 			
Cyanide			1 1	<u>!</u>		!!	!		

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 2 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-
Initial Calib	ration Source:	LEEMAN		
Continuing	Calibration Source:	SPEX		

Concentration Units: ug/L

1	Init	ial Calibratio			Continuing C				
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum	1 1	1	<u> </u>			T	I	ii_	
Antimony 📃	Į.		!	I		1	!		
Arsenic 🗌				ļ		1 1			
Barium 📘	["			I		l	1		
Beryllium 🗓	i	i	i	i		i i	<u> </u>	ii_	
Cadmium [l			
Calcium [!		I	1		l !		11	
Chromium 📙			i			i	i		
Cobalt [ì		
Copper 🗀	ļ.			i		i i	!	ļi.	
Iron [1			1 I			
Lead 📙			l L	I		l I			
Magnesium 🗍	i		i	i		i i	i	<u>ii</u>	
Manganese 🗍	1		1	I					
Mercury	I		l l	1		! !	!	11	
Nickel	į.		i	i		<u>i i</u>	i		
Potassium 🗧	···					l I	I] [
Selenium 🗍	i		i			<u>i</u>	1		
Silver [2016.0	2007.00	99.6	1000.0	1057.00	105.7	1040.00	104.0	P
Sodium 📋	!					!		11	
Thallium 🗀	i					<u>i i</u>		ii	
√anadium [
Zinc _	!					!!!		11	
Cyanide [i	1		l I	i	11	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 1 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory, Inc.	Contract: <u>G&H F</u>	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-
Initial Calibr	ration Source:	LEEMAN		
Continuing	Calibration Source:	SPEX		

Concentration Units: ug/L

! !	Ir	nitial Calibrat	ion ¦	(Continuing C	alibration			
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	M
Aluminum L		1	1	Ţ					
Antimony 📃		1	1 1			<u> </u>		1 11	
Arsenic 🗀		i I	<u>i i</u>	i		<u>i i</u>		<u>i 1</u>	
Barium 💄		l L	 			! ! !		1 11	
Beryllium 🗌		i	<u>i i</u>	1		<u> </u>		1 11	
Cadmium [! 1	<u> </u>			<u>i i</u>		<u> </u>	
Calcium [ļ 	1 1			 			
Chromium 🗀		<u> </u>	<u>i i</u>	<u> </u>		<u> </u>		 	
Cobalt		! !	<u> </u>			! !		<u> </u>	
Copper		[† i		1	
Iron _		<u> </u>	<u>i i</u>	i		<u>į į</u>		<u>i </u>	
Lead		! }	 			 		 	
Magnesium i		1	1 1			<u> </u>		1 11	
Manganese 🗌		i	<u>i i</u>	i		<u>i i</u>		<u> </u>	
Mercury		l 	1 1			<u> </u>		11 	
Nickel		!	<u> </u>	<u></u>		<u> </u>		 	
Potassium [! !	 	-		<u> </u>		<u> </u>	
Selenium		<u> </u>		1000 0	4007.00	I I		1 11	
Silver		<u> </u>	<u> </u>	1000.0	1037.00	103.7			P
Sodium :		 	 			 		 	
Thallium		<u> </u>	1	<u> </u>		<u> </u>		11	
Vanadium [<u> </u>	<u>i i</u>	i		i i		<u> </u>	
Zinc L		 	- 	- !		! ! !		1	
Cyanide	***	1	<u> </u>	<u> </u>		! !		 	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

PAGE 2 OF 2

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory, Inc.	Contract: <u>G&H F</u>	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-</u>
Initial Calibi	ration Source:	LEAMAN		
Continuing	Calibration Source:	SPEX		

RUN DATE:

9/1/94

Concentration Units: ug/L

Analyte	Init True	ial Calibratio Found	on	True	Continuing C Found	alibration %R(1)	Found	%R(1) 	М
Aluminum _			İ] 	
Antimony Arsenic	40.0	40.10	100.3	25.0	23.30	93.2		1 1	F
Barium !	40.01	40.10	100.3	25.01	23.30	1 93.21		 	
Beryllium i				+		 		1 11	
Cadmium [· · · · · · · · · · · · · · · · · · ·		 	1		' 		i ii	
Calcium			L			<u> </u>		 	
Chromium i	<u>i</u>			-				 	
Cobalt			 			 		i i i	
Copper _	<u>_</u>					 		1 11	-
Iron	i	1		1		 		1 11	
Lead	i			1		 		i i i	
Magnesium 🗀	1			-				1 11	
Manganese [1			1		1 1		1 11	
Mercury	i		i	İ				1	
Nickel	1		i	i		1		 	
Potassium 📮				1		i i		1 1	
Selenium 🗀	1		ı	i				1 1	
Silver [1		ļ	1		1		<u> </u>	
Sodium 📘	1		l l	l				11	
Thallium 🔲				i		i		i ii	
/anadium 📙			I I			1 11			
Zinc	!		1	ı		! !		11	-
Cyanide	i		<u>i i</u>	i		i <u> i </u>		 	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name: New England Testing Labora			Inc.	Contract: G&H	RD/RA
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: <u>NETL18-1</u>
Initial Calibr	ration Source:	·	LEEMAN		
Continuing	Calibration Source:		SPEX		

RUN DATE:

9/2/94

Concentration Units: ug/L

Analyte	Init True	ial Calibration Found	on %R(1)	True	Continuing C Found	alibration %R(1)	Found	%R(1) !!	M
Aluminum _] 	,		T					
Antimony	10.0	44 50	1010			1 00 0		10.0	
Arsenic [40.0	41.70	104.3	25.0	23.30	93.2	26.00	104.0	F
Barium [ļ				<u></u>		
Beryllium [l !	<u> </u>		l	Į.		
Cadmium [<u>_</u>		ļ	<u> </u>		<u> </u>			
Calcium			-	+		-		——————————————————————————————————————	
Chromium [11_	 - -		1			
Cobalt	<u>i</u> _		<u> </u>	<u>i</u>			<u> </u>	<u></u>	
Copper						-	'	11	
Iron	<u> </u>		<u> </u>	<u>-</u>		 	1		
Lead			ii-	i-		<u> </u>	<u>i</u>	——————————————————————————————————————	
Magnesium			i i	<u> </u>					
Manganese			 	+		 			
Mercury Nickel									
Potassium			1	<u> </u>		<u> </u>	<u> </u>		
Selenium I				+		 			
Silver						-	· · · · · · · · · · · · · · · · · · ·		
Sodium !	+			+			+		
Thallium			<u> </u>	<u>-</u>		<u> </u>			
Vanadium			+	- 			1		
Zinc I	1			+		<u> </u>	<u></u>	L_	
Cyanide L						-			
Cyaniue			<u> </u>			1			

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testing	Laboratory,	Inc.	Contract: G&H R	tract: G&H RD/RA		
Lab Code:	RI010	Case No.	E0831-02	SAS No.:		SDG No.: <u>NETL18-1</u>	
Initial Calibr	ration Source:		SPEX				
Continuina (Calibration Source:		JOHNSON & MATTH	EWSS			

Concentration Units: ug/L

l 1	init	ial Calibratio	on ¦		Continuing C	alibration		11	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	M
Aluminum				I			I	ii	
Antimony 📘	1		!	!		1 1			
Arsenic [i_		<u>i</u>	<u>i</u>		<u>i i</u>	i		
Barium 📙						! ! !}-	I		
Beryllium 🗓			<u> </u>	ı		<u> </u>	I		
Cadmium [i		i_	i		<u>i i</u>	i	i`_	
Calcium		- 1		<u> </u>		! !			
Chromium _	1					<u> </u>			
Cobalt				i		<u> </u>	i	;`_	
Copper	<u> </u>	(<u>-</u>		! !			
Iron	<u> </u>	12.55	1212		10.00	<u> </u>	i		
Lead	40.0	40.50	101.3	50.0	48.90	97.81	52.00		F
Magnesium _			1			1 1	!		
Manganese [<u>i</u>		<u> </u>	<u>i</u>		<u> </u>	i	<u>:</u>	
Mercury						1			
Nickel _	1			<u> </u>		<u> </u>			
Potassium _	i		<u> </u>			i i	i	<u>-</u>	
Selenium [<u> </u>	-		1 1 1 1			
Silver		· .	<u> </u>			 	1		
Sodium [Thallium [<u> </u>			i - i	<u>i</u>	i	
/anadium			 			 	+		
Zinc !				- -		<u> </u>	1		
Cyanide			-			! 	 j	i i-	··········
- yannue	<u>_</u>			!		 -			

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testin	g Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
Initial Calib	ration Source:	SPEX		
Continuina	Calibration Source:	JOHNSON & MA	ATTHEWS	

RUN DATE:

9/2/94

Concentration Units: ug/L

1	Init	ial Calibratio	n ¦		Continuing C	alibration		11 11	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	М
Aluminum							1		
Antimony 📙	<u> </u>	ļ.	1						
Arsenic	<u>i</u>	i	i			<u> i </u>			—
Barium 📙					-	 		 _	
Beryllium 🗀			1	I					
Cadmium [<u> </u>	i		
Calcium _	<u> </u>	I							
Chromium 🔲	i	i i	i			<u> </u>			
Cobalt _		1							
Copper	1		. !	1		<u> </u>			
Iron _	i	<u> </u>	i_			<u> </u>	i		
Lead						 			
Magnesium _		1	- +			1 1	<u></u>	11	
Manganese 🗌	<u>_</u>	i				<u> </u>	<u>i</u>	i_	
Mercury									
Nickel	<u> </u>	<u> </u>				<u> </u>	<u> </u>		
Potassium _				25.0	01.00		05.00		
Selenium	40.01	37.50	93.81	25.0	24.80	99.21	25.00	100.0	F
Silver		<u> </u>	<u></u>			<u> </u>			
Sodium [_						-			
Thallium		<u> </u>					<u> </u>		
Vanadium [<u> </u>	<u>i</u>	<u>i</u> _				i		
Zinc		···				<u> </u>	· · · · · · · · · · · · · · · · · · ·		
Cyanide	<u> </u>	<u> </u>	<u> </u>			! !			

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testin	g Laboratory,	Inc.	Contract: G&H F	D/RA
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: <u>NETL18-</u>
Initial Calibi	ration Source:		SPEX		
Continuing	Calibration Source:		JOHNSON & MA	TTHEWS	

RUN DATE:

9/6/94

Concentration Units: ug/L

1	· Ini	tial Calibration	on ¦		Continuing C	Calibration		11 11	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum			r	· · · · · · · · · · · · · · · · · · ·		1 I		ii	
Antimony 📋	!		1	I		!!		11	
Arsenic [i		<u>i i </u>	i		<u>i i</u>		<u> </u>	
Barium 📙	<u> </u>	· ····································	 			 			
Beryllium <u>i</u>	i		1 1			1 1		11	
Cadmium [i		<u> </u>			<u> </u>		ــا لــــــا	
Calcium 🗓			l I			1 1			
Chromium 🗌	i		<u> </u>	i		<u>i i</u>		<u>ii</u>	
Cobalt [<u> </u>			
Copper			<u> </u>	!		1 1		11	
Iron [i		<u> </u>	<u>_</u>		<u>i i</u>		<u> </u>	
Lead <u>L</u>	ļ		l					l I I	
Magnesium i	i		<u>i</u> i	i		i i		i i	
Manganese 🗌			[l			
Mercury _	!		!!!			1 1		11	
Nickel	i		<u>i i</u>	i		<u>i i</u>		<u>ii</u>	
Potassium 📗			! ! 			! ! ! !		11	
Selenium 📃	1		<u> </u>			1 1		11	
Silver [i		<u> </u>	i		<u> </u>			
Sodium [1		! <u> </u>			1			
Thallium 📃	40.0	40.70	101.8	25.0i	25.40	101.6i	26.20		F
Vanadium 🗌			l I LL			1			
Zinc	1		l !	!		! !			
Cyanide 🗀	i	•	i i					11	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testing	g Laboratory,	Inc.	Contract: G&H F	≀D/RA
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: <u>NETL18-1</u>
Initial Calibi	ration Source:		ERA		
Continuing	Calibration Source:		JOHNSON & MA	THEWS	

RUN DATE: 9/21/94

Concentration Units: ug/L

i 1	Init	tial Calibratio	n ¦		Continuing C	alibration		"	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	11
Aluminum [1	ı				T			
Antimony 📃	!	1	!	!		<u> </u>		1 11	
Arsenic 🗀	<u> </u>	i	<u> i </u>	i		<u> </u>		<u>i ii</u>	
3arium 📘			!			l I		1	
Beryllium i	i	i	<u>i</u>	i		i		i ii	
Cadmium _		i	<u>_</u>			<u> </u>			
Calcium 📘		1	!	!		<u> </u>		1 11	
Chromium 🗀	i	į	i					<u>i ii</u>	
Cobalt			!						
Copper	İ	1	<u> </u>	!		<u> </u>		1 11	
ron	I	1	i			<u> </u>		<u> </u>	
_ead		1	<u> </u>	1				1 11	
Magnesium <u>i</u>	<u>i</u>	i	<u>i</u>	i		<u>i</u>		<u>i i</u> ii	
Manganese 🗌		I	<u> </u>	i		<u> </u>		T	
Mercury 🛄	5.01	5.20	104.01	2.5	2.44	97.6		1 11	CV
Nickel	i	<u>.</u>	i	i		<u> i </u>		<u>i ii</u>	
Potassium 📙						<u> </u>		1 11	
Selenium 📃	1	i	ı			1		1 11	
Silver [<u>_</u>	i		<u> </u>		<u>i </u>	
Sodium 📘	1	<u> </u>	1			1			
hallium	i	<u>i</u>	i	j		i		<u>i</u>	
/anadium	l	L							
inc [!		!	<u>!</u>		1			
Cyanide 🗀			1	<u>-</u>		i i		1 11	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testing Laboratory, Inc.			Contract: G&H RD/RA		
Lab Code:	RI010	Case No.:	E0831-02	SAS No.:	SDG No.: <u>NETL18-1</u>	
Initial Calib	ration Source:		ERA			
Continuing	Calibration Source:		JOHNSON & MA	THEWS_		

RUN DATE:

9/16/94

Concentration Units: ug/L

i	Init	ial Calibratio			Continuing C			11 11 11	
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum			i	I				i_	
Antimony 📘	I		ļ.					11	
Arsenic 🗌	<u> i </u>	i	i			<u> </u>		<u>i ii</u>	
Barium [I				! ! 		1 11	
Beryllium 📋	1		<u>i</u>			1 1		11 T 11	
Cadmium 🗧		. 1		l		<u>i i i i i i i i i i i i i i i i i i i </u>			
Calcium 📙	I		!			l I			
Chromium 📙	i		<u> i </u>	į		<u> </u>		<u> </u>	
Cobalt	1					 		<u> </u>	
Copper <u>i</u>	<u> </u>					l I		1 11	
Iron [<u> </u>		<u> i </u>			<u>i i</u>		<u>i i</u>	
Lead _		i				 		11	
Magnesium 🗓	1		1			<u> </u>		+	
Manganese [<u>.</u>	i	1		<u>i i</u>			
Mercury	5.01	5.03	100.6	5.0	4.75	95.01		11	CV
Nickel	i		i			-		!	
Potassium						<u> </u>		<u> </u>	
Selenium _	<u> </u>					<u> </u>		1 11	
Silver	<u>.</u>	i	<u> </u>			<u>i i</u>			
Sodium L	 	I				 		! !! 	
Thallium [<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u> </u>			
Vanadium [i	<u>-</u>				<u>i i</u>		ے لے	
Zinc	I			<u> </u>		 		1 11	
Cyanide 📙	i	j	<u>i</u>	i		<u>ı i</u>		 	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testing	g Laboratory, Inc.	Contract: G&H R	D/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>
Initial Calibr	ration Source:	FISHER	 -	
Continuing (Calibration Source:	BAKER		

Concentration Units: ug/L

-		itial Calibratio	•		Continuing C				
Analyte !	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1) !!	М
Aluminum	I					T I		, ' '	
Antimony 🗀	Į.		<u> </u>			!!		! !!	
Arsenic 🗌			<u> </u>			<u>i i</u>		1	
Barium 📙	1		l I			! ! !			
Beryllium 🗓	i		<u> </u>		İ	i		i ii	
Cadmium [I		I I			1 I		11	
Calcium 📋						1 1		!!!	
Chromium 📙	i		i			i i		i ii	
Cobalt					1				
Copper 🗀	!		i i	Ì				1	
ron	ı						-	1 1	
Lead			l I					1 11	
Magnesium 📘	i		i			i	-	<u>i ii</u>	
Manganese 🗌	I		l I			l I L L		 	
Mercury	!					l !		1 11	
Vickel	i	ì	<u>i i</u>			<u> </u>		i ii	
Potassium 📙	!					i i			
Selenium 🔲	Ī		i			i i		i ii	
Silver [l			l		 	
Sodium			 						
Thallium 🔲	<u>i</u>		i					<u>i ii</u>	
/anadium 🗧			<u> </u>			! ! !!			
Zinc	1		! !	1		!			
Cyanide 📗	100.0	96.40	96.4	100.0	96.40	96.4		1 11	С

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name:	New England Testin	g Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-</u>
Initial Calibr	ration Source:	FISHER		
Continuing (Calibration Source:	BAKER		

Concentration Units: ug/L

		nitial Calibrat			Continuing C			11 11	i
Analyte	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum		I	<u> </u>			I I			
Antimony 📘		l	1 1			1 1			
Arsenic [i	<u>i </u>			<u> </u>		<u> </u>	
Barium 📙		 	<u> </u>			! ! 			
Beryllium i		<u> </u>	1 1			1 1		1	
Cadmium [! !	<u> </u>			<u>i i</u>			
Calcium 📮		l 	1 1			1			
Chromium 📋			<u>i i</u>			<u>i i</u>		i	
Cobalt [! !	1 1			<u> </u>			
Copper <u>i</u>		<u> </u>	1 1						l
lron			<u>i i</u>			<u> </u>			
Lead		 	 -			 -			
Magnesium 🗐		<u> </u>	1 1			<u> </u>			
Manganese [<u> </u>	<u>.ii.</u>						
Mercury		l 	1 1		 	 			
Nickel _			1 1						
Potassium [l	 			<u> </u>			
Selenium		l	1			l i		1 (1 (
Silver		Ĺ	بنب			<u> </u>		!	
Sodium L						 			-
Thallium		<u> </u>	1 1			1 1			
Vanadium [L	<u>i i</u>			<u> </u>			
Zinc		l	1 1		40.55		10.00		
Cyanide		<u>.</u>	<u>i i</u>	50.0	49.80	99.6	49.80	99.6	

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

Lab Name: New England Tes		ing Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>
AA CRDL St	andard Source:			
ICP CRDL S	tandard Source:	JONHSON & MATHEWS		

Concentration Units: ug/L

	CRDL Sta	andard for AA	\		CRDL Standa	rd for IC		
			-	I	nitial		Final	
Analyte	True	Found	%R	True	Found	%R	Found	%R
Aluminum		1	<u> </u>	NR	· · · · · · · · · · · · · · · · · ·	1	L	
Antimony		i .	1	!		i	1	
Arsenic			i	i	Ĩ	i	ı	
Barium		1	Time to the	1				
Beryllium		!	<u> </u>		!	!	!	
Cadmium		i	i	i				·
Calcium		1	1	NR	I			
Chromium		1	1			i	I	
Cobalt		j		1		i		
Copper		1	1	50.0	56.80	113.6¦	53.40	106.8
Iron		i	i	NR i	j	i	i	
Lead		I I				<u> </u>		
Magnesium	ļ	!	!	NR !	l	!	I	
Manganese		İ	<u></u>	30.0	34.30	114.3	33.90	113.0
Mercury] 						
Nickel		!	<u> </u>			!	<u> </u>	
Potassium		l		NR .	i	<u>i</u> _	i	
Selenium	<u> </u>	<u> </u>	<u> </u>	<u> </u>			1	
Silver		i	<u> </u>	i	l l	<u> </u>	1	
Sodium		<u> </u>	<u>i </u>	NR	1	<u>.</u>		
Thallium		1	<u>.</u>	<u> </u>	<u> </u>			
Vanadium	<u></u>	<u>i</u> .	<u>i</u>	i	i	<u>i</u>	i_	
Zinc		1	i		I	<u> </u>		

Lab Name:	New England Testin	g Laboratory, Inc.	Contract: G&H	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
AA CRDL Sta	andard Source:		,	
ICP CRDL S	tandard Source:	SPEX		
		Concentration Units: ug/L		

, ; i	CRDL Standard for AA			CRDL Standard for ICP					
i					Initial	Final			
Analyte	True	Found	%R	True	Found	%R	Found	%R	
Aluminum		1			 				
Antimony		I	_	120.0	184.00	153.3!	122.00	101.7	
Arsenic		i			i i	i	ì		
Barium {		1			1 1		1		
Beryllium		1	1		1	l	!		
Cadmium		1			 	<u> </u>			
Calcium		1	!		 		1		
Chromium i		i	i		i i	i	i		
Cobalt {		1 1	<u>i. </u>		! !				
Copper		1	:		1	- !			
Iron		i	<u>i</u>		<u>i i</u>	i	<u> </u>		
Lead [<u> </u>	<u>. </u>) 				
Magnesium		!	1		1				
Manganese		<u>i </u>	<u>i</u>		<u>i i i </u>	<u>i</u>	i		
Mercury		<u> </u>	↓						
Nickel i		1	! 		1 1	1			
Potassium		<u> </u>	<u> </u>		<u> </u>	<u>i</u>	<u>i</u>		
Selenium		! 	 		 		-		
Silver		1	! 		<u> </u>	<u> </u>	<u> </u>		
Sodium [<u> </u>	i		ļ				
Thallium		1 1	┆┈╢			<u> </u>	- !		
Vanadium		!	┼ ──∦		<u> i</u>	<u> </u>	<u>_</u>		
Zinc		1			1	<u> </u>			

FORM II (PART 2) - IN

Lab Name:	New England Test	ing Laboratory, Inc.	Contract: G&H R	D/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>
AA CRDL Sta	ndard Source:			
ICP CRDL Sta	andard Source:	SPEX		

Concentration Units: ug/L

	CRDL Sta	andard for AA	`		CRDL Stand	ard for IC	CP Final	
Analyte	True	Found	%R	True	Found	%R	Found	%R
Aluminum		1	1		1	I I	I	
Antimony		!	!		!	į į	į	
Arsenic		i	i		i	i	i	
Barium		1] 	NR	1	1 1	NR ;	
Beryllium		!	1		1	!!!	ļ	
Cadmium		1	İ		İ	<u> </u>		
Calcium		ł L	1		<u> </u>	! ! !		
Chromium		i	i		i	<u>i i</u>	i	
Cobalt		<u> </u>	1		<u>.</u>	<u> </u>		
Copper		l' .	l ·		1		!	
Iron		<u>i</u>	i		<u>i</u>	<u>i</u>	i	
Lead		! !	<u> </u>		<u> </u>	<u> </u>	1	
Magnesium		I .	1		1	!!	!	
Manganese		<u> </u>			<u>i</u>	<u>i i</u>	i	
Mercury Nickel		l +	ļ +		<u> </u>	 		
		1	Į į		!	<u> </u>	1	
Potassium		<u> </u>	i l		<u> </u>	<u> </u>		
Selenium		! !	1		 	 		
Silver		<u> </u>	!		<u> </u>	1 1	!	
Sodium		<u> </u>	-		<u> </u>			
Thallium		1	1	·	1	1 1		
Vanadium [<u> </u>	<u>i</u>		<u> </u>	نِـــنِ	i	
Zinc ¦		l 	1		! 	 		

FORM II (PART 2) - IN

P.08

U.S. EPA - CLP 2B CRDL STANDARD FOR AA AND ICP

Lab Name:	New England Testing	g Laboratory, Inc.	Contract: G&H RD/RA		
Lab Code;	RI010	Case No.:E0831-02	SAS No.:	SDG No.: <u>NETL18-1</u>	
AA CRDL Sta	ndard Source;				
ICP CRDL Sta	andard Source:	SPEX			
		Concentration Units: ug/L			

	CRDL Standard for AA			CRDL Standard for ICP Initial			Final	
Analyte	True	Found	%R	True	Found	%R	Found	%Ŗ
Aluminum		<u> </u>	!	 ,	!			
Antimony i		l	1		1	<u></u>		
Arsenic		1			1		· ·	
Barium [•	1			i	-		
Beryllium j		ſ	i	10.0	10.901	109.01	10.801	108.0
Cadmium	-	i		10.0	12.80	128.0	11.40	114.0
Calcium {						1		
Chromium		1	Ī	20.0	21.20	106.01	24.00	120.0
Cobalt		i	;	100.0	113.70	113.7	117.00	117.0
Sopper [1				ì	1	
on l		i L	1			!		
Lead			<u> </u>				i	
Magnesium [·	<u>i</u>					
Manganese		l 	<u> </u>		1			
Mercury			<u> </u>		1	<u>i</u>	i	
Nickel			<u> </u>	80.0	89.30	111,6	84.80¦	106.0
Potassium [· · · · · · · · · · · · · · · · · · ·	L	<u> </u>					
Selenium i Silver		<u> </u>	!	<u> </u>	1	1	· ·	
Sodium !			! 		<u> </u>		i	
Sodium : Thallium :			<u>: </u>	<u>-</u>				
Vanadium			<u> </u>	100.0	400.00	100.01	111 00	
Zinc			┼		109.80	109.8	111.90	111.9
Line i			-	40.0	44.00	110.0	46.60	116,5

Lab Name: New England Testing		_aboratory, Inc.	Contract: G&H RD/RA		
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.:	NETL18-1
AA CRDL Sta	indard Source:				
ICP CRDL Sta	andard Source:	JONHSON & MATHEWS			

Concentration Units: ug/L

	CRDL Standard for AA			CRDL Standard for ICP					
	! 				Initial		Final		
Analyte	True	Found	%R	True	Found	%R	Found	%R	
Aluminum		1	-			1			
Antimony		!			i	i	<u> </u>		
Arsenic		i		i	i	i	i		
Barium		1	Ţ				I		
Beryllium		ļ.	!	ì	Ī	1	Î		
Cadmium		1	1			1			
Calcium		1	1		1	1	!		
Chromium	<u></u>	i	i	i	Ī	i	i		
Cobalt			1			1			
Copper		1	1				!		
Iron		İ .	i.		i	i	i		
Lead		1	<u> </u>	80.0	75.50	94.4	82.40	103.0	
Magnesium		!	!	ı	i		1		
Manganese		<u>i</u>		1		1			
Mercury		<u> </u>		!	· · · · · · · · · · · · · · · · · · ·				
Nickel		<u> </u>		i	i	<u> i </u>	i		
Potassium		<u> </u>	<u>i</u>		i		<u> </u>		
Selenium		! 	<u> </u>						
Silver		!	<u> </u>			1			
Sodium ¦		<u>.</u>	 						
Thallium		<u> </u>	┼		1		<u> </u>		
Vanadium		ļ	<u> </u>	i	<u>.</u>	<u> </u>	<u>i</u>		
Zinc		+	-		-				
ı		1	1	ı	ı	ı	1		

FORM II (PART 2) - IN

			Contract: G&H RD/RA		
Lab Code: R	Ca	ase No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1	
AA CRDL Stand	ard Source:				
ICP CRDL Stand	dard Source:	SPEX			

Concentration Units: ug/L

	CRDL St	andard for AA			CRDL Standa	rd for IC		
Analyte	True	Found	%R	True	Initial Found	%R	Final Found	%R
Aluminum		T	 		1 1	- 	1	
Antimony		1	!		!	1	!	
Arsenic	l	1	i		1	i	i	•
Barium		1	I					
Beryllium		1	Ī		1 1	!	<u>.</u>	
Cadmium			i					
Calcium		1					1	
Chromium		i	ĭ		i i	i	i	
Cobalt								
Copper		1	!				ļ.	
Iron		i	ī			<u> </u>	i	
Lead		 			I		!	
Magnesium		l	!		1 1	<u> </u>	!	
Manganese		<u> </u>	<u>i</u>		<u>i</u> i	i	i	
Mercury	l 	1	 		·			
Nickel		i	<u> </u>		<u> </u>	!		
Potassium		<u> </u>	<u> </u>		<u>.</u>		i.	
Selenium	 	<u> </u>	! !		1 1			407.6
Silver			<u> </u>	20.0	21.80	109.0	21.50	107.5
Sodium	 	1	 					
Thallium	<u> </u>	<u> </u>	;		1 1	! 	· · · · · · · · · · · · · · · · · · ·	
Vanadium		<u> </u>	<u> </u>		<u> </u>	<u> </u>	<u></u>	
Zinc	l 	I 4	<u> </u>	· · · · · · · · · · · · · · · · · · ·	 			

Lab Name:	New England Test	ing Laboratory, Inc.	Contract: G&H RD/RA		
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>	
AA CRDL Sta	andard Source:	SPEX			
ICP CRDL St	andard Source:				
RUN DATE:	9/1/94	Concentration Units: ug/L			

	CRDL Stan	dard for AA			CRDL Stand	ard for IC		
					Initial		Final	
Analyte	True	Found	%R	True	Found	%R	Found	%R
Aluminum	' 	I				T I		
Antimony	I .	I			!	!!		
Arsenic	10.0	9.90	99.0		<u>i </u>	<u>i i</u>	i	
Barium					<u> </u>	<u> </u>		
Beryllium	l				1	!!	I	
Cadmium	<u> </u>	<u>'</u>			<u>i </u>	<u>i i</u>	<u> </u>	
Calcium	I I	I			ļ	1 1		
Chromium	1	!			1	<u> </u>	<u> </u>	
Cobalt	<u> </u>	i			<u>i</u>	<u>i — </u>	i	
Copper					! - !			
Iron	 				1	1		
Lead	<u> </u>	i			<u> </u>	<u>i - i</u>	i	
Magnesium	l 	1			1	1 I		
Manganese	-				!	<u> </u>	1	
Mercury	<u> </u>				!	i i	<u>i</u>	
Nickel Potassium	1 <u> </u>				1	1 1		
Selenium	<u> </u>					1 .1	1	
Silver					.	 		
Sodium	 	<u> </u>			'i	1 1	·····	
Thallium	L				 	1 1		
Vanadium					•	i i	· · · · · · · · · · · · · · · · · · ·	
Zinc	 				1	1 1		
	!				!	+ +		

FORM II (PART 2) - IN

Lab Name:	New England Test	ting Laboratory, Inc.	Contract: G&H	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
AA CRDL Sta	andard Source:	SPEX		
ICP CRDL St	tandard Source:			
RUN DATE:	9/2/94	Concentration Units: ug/L		

	CRDL Standard for AA			CRDL Standard for ICP				
į					Initial		Final	
Analyte	True	Found	%R	True	Found	%R	Found	
Aluminum					1	l		_
Antimony		I			1	I		<u> </u>
Arsenic	10.0	10.50	105.0		i	i		<u> </u>
Barium					1	1		
Beryllium	1	ļ			į.	!		1
Cadmium	i	i			i	1		
Calcium		1		•	!]		
Chromium	i	i			i	i		
Cobalt]		
Copper	!	ļ			!	!		
Iron	1	1			ı	j		
Lead	1				1	J		
Magnesium	` i				İ			
Manganese		Ī			1	1		
Mercury	1				1	1 1		
Nickel	i	i			i	i		
Potassium					<u> </u>	1		
Selenium	<u> </u>				1	1		
Silver		<u> </u>			<u>i</u>	<u>i </u>		<u></u>
Sodium	 	I			1	1		
Thallium	<u> </u>	i			1	1		
Vanadium		<u> </u>			<u> </u>			
Zinc	<u> </u>				1	1	 	_
i	ii	i		•	i	i		

FORM II (PART 2) - IN

Lab Name:	New England Test	ing Laboratory, Inc.	Contract: G&H RI	D/RA
Lab Code:	RI010	Case No.:E0831-02	SAS No.:	SDG No.: NETL18-1
AA CRDL St	andard Source:	JOHNSON & MATTHEWS		
ICP CRDL S	tandard Source:	42000		
		Concentration Units: ug/L		

	CRDL Star	ndard for AA		CRDL Stand	ard for I	· ICP Final		
Analyte	True	Found	%R	True	Found	%R	Found	
Aluminum	· · · · · · · · · · · · · · · · · · ·	· I			T			
Antimony	1	į			İ	!		
Arsenic	ı	i			1	i		
Barium	I	I			1			
Beryllium	I				1	1	ı	
Cadmium		1			, i	İ		
Calcium					1			_
Chromium	Į į				i	1		
Cobalt		i			1	i	<u> </u>	_
Copper	1				ļ	1	I	
Iron	1				!	!		
Lead	3.0	2.60	86.7		<u>.l</u>			
Magnesium	1	- !			<u> </u>			
Manganese	<u> </u>				.1	1	. 1	
Mercury Nickel	<u> </u>	<u>.</u>			!			_
Potassium		1		-	1	1	<u> </u>	_
Selenium	<u> </u>	<u>I</u>			1	1 1		
Silver		i			-	<u>; </u>		
Sodium	1	1	•••		1	 		
Thallium	1				1		<u>.</u> 1	
Vanadium		1			1		i	_
Zinc	İ	<u>-</u>			1	 		
!	 				1	 		_

FORM II (PART 2) - IN

Lab Name:	New England Testi	ng Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
AA CRDL Sta	andard Source:	JOHNSON & MATTHEWS		
ICP CRDL St	andard Source:			
RUN DATE:	9/2/94	Concentration Units: ug/L		

Analyte	CRDL Star	ndard for AA			CRDL Standard for ICP						
Analyte	True	Found	%R	True	Found	%R	Found	%R			
Aluminum					1	1					
Antimony	į.	į			<u> </u>	i	į				
Arsenic	i	i			i	i					
Barium		1			1]]] 				
Beryllium	!	!			!	1	!				
Cadmium	1	i			1	1					
Calcium					1	l L					
Chromium	i	i			i	i	<u> </u>				
Cobalt	1				_ <u>_</u>	! 	<u> </u>				
Copper	l l				!	1	 				
Iron	i i	i			<u>i</u>	i	i				
Lead					<u> </u>	<u> </u>	 				
Magnesium	1	1			!	1					
Manganese	i	i			<u>i</u>	<u>i</u>	i i				
Mercury				·	! ∔		 				
Nickel	1				1	1	1				
Potassium					<u>i</u>	<u> </u>	<u>. </u>				
Selenium	5.0	4.90	98.0			! 					
Silver	1			ļ	+	<u> </u>	<u> </u>				
Sodium		·			!	<u> </u>	ļ				
Thallium					1	1					
Vanadium		<u> </u>			+	1	<u> </u>				
Zinc		-				<u> </u>					

FORM II (PART 2) - IN

Lab Name:	New England Test	ing Laboratory, Inc.	Contract: G&H F	RD/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
AA CRDL Sta	andard Source:	JOHNSON & MATTHEWS		
ICP CRDL St	andard Source:	 		_

Concentration Units: ug/L

RUN DATE:

9/6/94

i i	CRDL Star	ndard for AA			CRDL Standard for ICP				
Analyte	True	Found	%R	True	Found	%R	Found	%R	
Aluminum			· · · · · · · · · · · · · · · · · · ·		T I	1			
Antimony !	1				į	<u>i</u>			
Arsenic	i	-			i	1			
Barium [1	l l			
Beryllium !	1				I	1			
Cadmium	i				1	1			
Calcium [1	ļ	1		1	l		1	
Chromium i	i	i			i	i	i		
Cobalt		l	,		1	1			
Copper	!	I			1]		
Iron <u>i</u>	i				1	i			
Lead					1	l 1	l		
Magnesium [Ī	İ	l		İ	1			
Manganese					1	1			
Mercury	1	I			1	1	l L		
Nickel	l I				i	i			
Potassium [1	1			
Selenium	1		l		1		 		
Silver	i				<u> </u>	<u> </u>			
Sodium	ļ				1				
Thallium	10.01	10.00	100.0		1	1			
Vanadium	<u>.</u>				<u> </u>				
Zinc					1	1	 		
<u> </u>	<u> </u>	i			1	1	<u> </u>		

FORM II (PART 2) - IN

Lab Name:	New England Testing La	boratory, Inc.	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
AA CRDL Star	ndard Source:	JOHNSOM & MATHEWS		
ICP CRDL Sta	indard Source:			

Concentration Units: ug/L

RUN DATE:

9/21/94

	CRDL Star	ndard for AA			CRDL Standard for ICP Initial Final					
Analyte	True	Found	%R	True	Found	%R	Found	%R		
Aluminum	· · · · · · · · · · · · · · · · · · ·				1	1 1	· · · · · · · · · · · · · · · · · · ·	-		
Antimony	!	İ			1	<u>i i</u>	i			
Arsenic	i				1	i				
Barium	7				Ţ	1 1				
Beryllium	!	!			ļ.	! !				
Cadmium	ì				1	i	i			
Calcium	1	I			!	1 1				
Chromium i	i	i			i	i i	i			
Cobalt	. L						l			
Copper	<u> </u>	·			1					
Iron	i	i			<u>i</u>	<u>i i</u>	i			
Lead	!					<u> </u>				
Magnesium				-	<u> </u>	!!	!			
Manganese	<u></u>				<u>. i</u>	<u>i i</u>	i			
Mercury	0.21	0.15	75.0		·	<u> </u>				
Nickel	!	1			<u> </u>	!!	<u> </u>			
Potassium					<u> </u>	<u>i — i</u>	i			
Selenium					+	 				
Silver	. <u>I</u>				!	! !				
Sodium					<u> </u>	<u>i </u>	<u>.</u>			
Thallium	· · · · · · · · · · · · · · · · · · ·	1				+ +				
Vanadium					1	 	<u>-</u>			
Zinc	-					 				

FORM II (PART 2) - IN

Lab Name:	New England Test	ing Laboratory, Inc.	Contract: G&H RI	D/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL18-1
AA CRDL Sta	andard Source:	JOHNSOM & MATHEWS		
ICP CRDL S	tandard Source:			
RUN DATE:	9/16/94	Concentration Units: ug/L		

	CRDL Star	ndard for AA			CRDL Stand	lard for IC	CP Final	
Analyte	True	Found	%R	True	Found	%R	Found	%R
Aluminum					1	1 1	- 1	
Antimony	İ	İ			İ	i i	1	
Arsenic	i				i	i i	i	
Barium	Ī				1		Į Į	
Beryllium	ı	<u> </u>			!	1 1	i	
Cadmium	i					<u>i i</u>	<u> </u>	
Calcium		I			! 	1 1		
Chromium	i				i	1 1	1	
Cobalt					<u>i</u>	ijij	i	
Copper	<u> </u>				<u> </u>	 		
Iron	1				!	1 1	1	
Lead	<u> </u>	i			<u> </u>	i i	<u>i</u>	
Magnesium	1				1	1 1		
Manganese	0.2!	0.16	80.0		i	1 1	. 1	<u> </u>
Mercury Nickel	0.2	0.10	80.0		<u> </u>	! !	<u> </u>	
Potassium	T	1			1	i i	i	
Selenium	<u> </u>	<u> </u>				1 1	1	
Silver	<u> </u>				1	-1	:	
Sodium	<u> </u>	i) 	i	i i	<u>i</u>	
Thallium	i i	i			i	1 1		
Vanadium	1	ľ			1	1 1	1	
Zinc					1	1 1		
	i				i	i	i	

FORM II (PART 2) - IN

Lab Name:	New England Test	ting Laboratory	Contract: G&H RD/F	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	vater):	SOIL	
Preparation	Blank Concentratio	n Units (ug/L or mg/kg):	mg/kg	

	Initial Calib. Blank	 	C	ont	inuing Calibr Blank (ug/L)			 	Prepa- ration	 	
!Analyte	(ug/L)	C¦	1	С	2	С	3	C	l Blank C	I I	M
Aluminum	38.0	ָּיָט ו	38.0	U	38.0	U	38.0		5.209 U	יור ער	Р
Antimony							!		1	ij	
Arsenic							ĺ		<u>i </u>	<u> </u>	
Barium] [] L	
Beryllium		<u>i i</u>	l		i		i	<u> i</u>	<u>i i</u>	ii	i
Cadmium							l	!	<u> </u>] [l
Calcium	8.0	U	8.0	U	8.0	U	8.0	Ш	5.483 B	l	P!
Chromium		i							<u>i i</u>	įį	
Cobalt							[!		! !	 	
Copper	8.8		4.0			_					P !
Iron	3.0	U	3.0	U	3.0	U	3.5	В	3.153 B	<u>֚֓֞</u> ׅׅׅׅׅׅׅׅׅׅׅׅׅׅׅ֝֓֞֞֝֞֝	P
Lead		<u> </u>				 	I ↓			1 1	
Magnesium	16.1		10.7						i 1.919i B		Pi
Manganese	1.0	U	1.0	U	1.0	U	1.0	U	0.137 U	וֹנ	Р
Mercury		<u> </u>					l 	Ц	<u> </u>	1 i	
Nickel		i					<u>i</u>	<u>i</u>	<u>i</u>	įį	
Potassium !	-431.8	B;	354.0	U	-1021.0	В	-785.0	В	48.526 U	1 h	Р
Selenium							l :		1	11	<u> </u>
Silver		<u>i</u>		أسا			l.	نــــــــــــــــــــــــــــــــــــــ	<u> </u>	jį	
Sodium	414.1	B	411.5	В	252.4	В	122.1	В	73.338 B	 	Р
Thallium		-					i	_	1	ij	
Vanadium (1 .	ظ	<u> </u>	ונ	i
Zinc					1		[_	1	11	
Cyanide		<u>i</u>					<u> </u>		<u>i</u>	įį	
							<u> </u>			;	

Lab Name:	New England Test	ing Laboratory	Contract: G&H RD/	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	rater):	WATER	,
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	UG/L	

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Initial Calib. Blank	-			uing Cal lank (ug/				Prepa- ration	1	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;
Analyte	(ug/L)	C¦	1	С	2	С	3	C	Blank	C¦	! M !
Aluminum		1 1		1 1 1 1		1 1			38.000	U	P
!Antimony		1 1		1 1		1 1				\sqcup	
Arsenic		<u>i i</u>		<u>i i </u>		<u>i i</u>		<u> </u>		i i	<u> </u>
Barium		<u> </u>		1 1		1 1		اننن	L	Ш	
Beryllium		1 1		1 1		1 1		<u> </u>			
Cadmium		1 1		1 1		11		+	40.000		
Calcium		$\dot{\cdot}$		ìi				<u> </u>	42.000	R	Р
Chromium Cobalt		1 1		++		1 1					
!Copper	<u> </u>	++		++		1 1		!	4.000	Щ	${P}$
Iron		: :		: :		- i i		-i-i i	5.800		P
Lead		+ +		+ +		- - 		+	0.000	H	
Magnesium		++		++					7.500	묾	P
Manganese		1-1-		1 1					1.000		P
Mercury		! !		- - - - - - - - - - 		<u> </u>					
Nickel		1 1		1 1		ii		1 1			
Potassium									-483.000	В	P
Selenium		1 1		1 1		1 1			 		
Silver		<u>i i</u>		<u>i i</u>		<u>i i</u>					<u>. </u>
Sodium		 		1 1		1 1			308.400	LB'	L P
Thallium		1 1		1 1		1 1		+ 1 !			
Vanadium		بنب		ii		_i_i_		زنب	.	بن	<u> </u>
Zinc		+ +		 		1 1					<u> </u>
Cyanide	<u> </u>	1 1		1 1		1 1			<u> </u>		
	<u> </u>	نن	 	<u> </u>		<u> i i </u>		ا نــنــ		نــــــــــــــــــــــــــــــــــــــ	نــــــــــــــــــــــــــــــــــــــ

Lab Name:	New England Testi	ing Laboratory	Contract: G&H RD/R/	<u> </u>
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	ater):	SOIL	
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	MG/KG	

Analyte	Initial Calib. Blank (ug/L)	c	Co		nuing Calibr Blank (ug/L) 2		on 3	i ! !	Prepa- ration Blank	C	I I I I I I I I I I I I I I I I I I I
Aluminum	ı I	i									
Antimony [57.0	U!	57.0	U.	57.0	ָיַט	57.0	U	7.814	U	P
Arsenic	ĺ	i		i		i				<u> </u>	<u> </u>
Barium		<u> </u>							l 		<u> </u>
Beryllium		<u>i</u>		İ					i		
Cadmium		<u> </u>				1			<u></u>		<u>. </u>
Calcium		!									
Chromium	i	i	i	i					i	<u> </u>	<u>i</u>
Cobalt						1			! !		
Copper	I	!				!			1	\Box	1
Iron	<u>i</u>	<u>i </u>		<u> </u>					<u>i</u>	<u> </u>	<u> i </u>
Lead ¦									1	Ш	<u>. </u>
Magnesium	!	ı		1		_ !			<u> </u>		
Manganese (i		<u> </u>		i		نـــن	<u> </u>	نـــن	<u> </u>
Mercury				1					<u> </u>	Щ	i ! ├
Nickel				ĺ				Ш		Щ.	
Potassium	1	<u>i</u>							<u> </u>	نا	<u> </u>
Selenium	1			1					<u> </u>	Н	<u> </u>
Silver		<u>i</u>		<u> </u>		i		<u></u>	<u> </u>	<u> </u>	<u> </u>
Sodium		_ <u> </u>		 					l L	Ш	<u> </u>
Thallium			. [1		<u> </u>			<u> </u>		
Vanadium [<u> </u>	<u> </u>		نـــٰ	<u> </u>	نــــــــــــــــــــــــــــــــــــــ		نا	<u> </u>	نا	نــــــــــــــــــــــــــــــــــــــ
Zinc	1			-		┙		Щ] 	 	<u> </u>
Cyanide	į	<u>į</u>		i		į			1	Ш	
	I					_ :			L		

Lab Name:	New England Test	ing Laboratory	Contract: G&H RD/	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	rater):	WATER	
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	UG/L	

i	Initial Calib. Blank	 			uing Calil ank (ug/l				Prepa- ration	1	
Analyte	(ug/L)	C¦	1	С	2	С	3	C	Blank	c¦	! M !
Aluminum		1 1 1 L				1 1					
Antimony	<u> </u>	1 1		1 1		1 1		-	57.000	U	P
Arsenic		<u>i i</u>		<u>i i</u>		<u>i i</u>				<u> </u>	<u>i</u>
Barium		! !		1 1		1 1				 	
Beryllium		!!		1 !		1 1					<u> </u>
Cadmium		<u>i i </u>		<u>i i</u>		<u>. i i </u>		ا نــــــــــــــــــــــــــــــــــــ			نـــــــن
Calcium		 		1 1		1 1					
iChromium i		i i		i i		i i					<u>i</u>
Cobalt		<u>.i. i.</u>				1 1		ا نــنــ		نا	L
Copper		1 1		1 1		1 1				<u> </u>	<u> </u>
Iron		<u>i i </u>		<u>i i .</u>		<u>i i</u>		<u> </u>		<u> </u>	<u>i </u>
Lead		<u> </u>		1 1		11		╧			
Magnesium		1 1		1 1		1 1					
Manganese		<u>_i_i</u> _		<u> i i </u>		<u> </u>		ا نـنــ		ட்	نــــــن
Mercury		 		 		+ +		;		\vdash	<u> </u>
Nickel		1 1		1 1		1 1					
Potassium		<u>i i </u>				<u>i i</u>		ا نــنــ		نــــــ	نـــــــن
Selenium		1 1		1 1		1 1				\vdash	l
Silver		1 1		<u>i i</u>		<u>i i</u>		+			<u></u>
Sodium		1 1				1		;		Ш	
Thallium		1 1		1 1		1 1				Н	
Vanadium		بن		<u> </u>		بن		ز نب		نب	<u></u>
Zinc		 		<u> </u>		 -		_		<u> </u>	
Cyanide		1 1		1		<u> </u>				LÍ.	<u>i</u>
<u> </u>		<u> </u>				<u> </u>				النا	

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	SOIL	
Preparation	Blank Concentration	Units (ug/L or mg/kg):	MG/KG	

1 1	Initial Calib. Blank				inuing Calibr Blank (ug/L)			1 1 1	Prepa-		
Analyte	(ug/L)	C¦	1	С	2	С	3	C	Blank	C¦	M
Aluminum		1 I 1 I					1		L		
!Antimony		 					! !		1	\perp	<u> </u>
Arsenic		ij					1	1 1	1	1	
Barium	1.0	U	1.0	U	1.0	_		1.0 U	0.137	ĽĽ	P
Beryllium		1 1		_			<u> </u>		!	 	
Cadmium		<u>i i</u>					<u> </u>	+	<u> </u>	 	1
Calcium		 					 		ļ	i i	<u> </u>
iChromium i		1 1					<u> </u>		<u> </u>	+	
Cobalt		<u>i i</u>					1			-	<u></u>
Copper I		+ +				-	 		<u> </u>	ij	
		 				_	<u> </u>	-¦- ¦	-	+-	
Lead		+++				<u> </u>	 		<u> </u>	+	
Magnesium Manganese		i i				-	.	 -i	<u> </u>	i	
Mercury	<u>. </u>	+ +					 			H	-
Nickel	l e	+ +				_	 			+	
Potassium		i i					i 			1	
Selenium	l 	1 1			l		ı			\Box	
Silver	1	 			l		l			1 1	
Sodium	<u> </u>	i i					İ	1			
Thallium		; ;			! !		i				
Vanadium		1 1					l				
Zinc		1 1		l 	!		!		I		
Cyanide		1 1			i		i		1		
					I I	L	<u> </u>		 	<u> </u>	

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/R	<u>A</u>
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	WATER	
Preparation	Blank Concentration	Units (ug/L or mg/kg):	UG/L	

Analyte	Initial Calib. Blank (ug/L)	C	1		uing Calit lank (ug/l 2		n 3		I Prepa- I ration Blank	C	i i i i i i i i i i i i i i i i i i i
Aluminum		1		<u> </u>					1		
Antimony		++		1 1		++		++		H	
Arsenic		+ +		+ +		+ +			 		
Barium		i i		i i		i i		ij	1.000	ָּיַטוֹ ו	P
Beryllium		1 1		1 1		+ +		+-			
Cadmium		1 1		1 1		1 1					
Calcium		i i		 		 		+			
Chromium		- - 				++			<u> </u>		
Cobalt		1 1		1 1		1 1					
Copper		11		1 1		1 1					
Iron		1 1		1 1		1 1		1 1			
Lead		1 1		1 1		1 1					
Magnesium		1 1		1 1		1 1			i		
Manganese				1 !							
Mercury				1 1		1 1					
Nickel		ii		ii		<u>i i</u>		<u>. i i</u>		\Box	<u> </u>
Potassium				1 1							
Selenium		1 1		1 1		1 !		1	<u> </u>		
Silver		<u>i i</u>		<u>i i </u>		<u>i i</u>		<u>i i</u>		<u>i</u>	<u>i</u>
Sodium		1 1		1 1		1 1			l 	 	<u> </u>
Thallium		1 1		1 1		1 1					
Vanadium		بنب		<u> </u>		بنب		نب	İ	نيا	إـــــــا
Zinc		- 		 		<u> </u>		-11	 	 	
Cyanide		1 1		1 1		1 1		+		H	
		<u>. i i i</u>				<u></u>		نن	, [

Lab Name:	New England Test	ing Laboratory	Contract: G&H R	D/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No <u>NETL-18-1</u>
Preparation	Blank Matrix (soil/w	rater):	SOIL	
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	mg/kg	

	Initial Calib. Blank	1	C	ont	inuing Calibr Blank (ug/L)			1 1 1	Prepa-	1	
Analyte	(ug/L)	C	1	С	2	С	3	C¦	l Blank	C¦	M !
Aluminum							1				
Antimony					ļ		!			\Box	
Arsenic					l	_	l				
Barium !					l		[<u> </u>
Beryllium	1.0		1.0						<u>0.137i</u>		P
Cadmium	1.0	U	1.0	U	1.0	U	-1.6	В	0.137	υ¦	Р
Calcium			ļ			<u> </u>			<u> </u>	_	\square
Chromium	3.0							_	0.411		Pi
Cobalt	6.0	U;	6.0	_	6.0	U	6.0	Ľ	0.822	U;	L P
Copper						<u> </u>			1 1	_¦	\vdash
Iron						<u> </u>		<u> </u>	<u> </u>	<u>—</u> į	\vdash
Lead					 	<u> </u>	! !	L.		_;	<u> </u>
iMagnesium					, , ,		l ·			_	
Manganese		بن				<u> </u>		بن	<u> </u>	ᅼ	نِسا
Mercury	40.0	 	40.0	11		<u> </u>	40.0	븠	4 074		 _
Nickel	10.0	0	10.0	U	10.0	<u> </u>	-10.0	븸	1.371	씍	Pi
Potassium		<u> </u>				<u> </u>		\vdash i		— į	<u> </u>
Selenium I		-				_	7 T				
Silver		H	·			<u> </u>		Щ	-	-	
Sodium !		ij		-		<u> </u>		ij	<u> </u>	− į	<u> </u>
Vanadium	3.0		3.0	Ū	3.0	1	3.0	급	0.411	_	P
Zinc	4.0		4.0								
	4.0	0	4.0	U	4.0		4.0	Η,	0.5461	끅	
Cyanide							1 I	\dashv	! !		\vdash
<u> </u>		نت			L	_	L	نب	<u> </u>		<u> </u>

Lab Name:	New England Test	ing Laboratory	Contract: <u>C</u>	3&H RD/RA		
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.: _		SDG No	NETL-18-1
Preparation	Blank Matrix (soil/w	ater):	WATER			
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	<u> </u>	JG/L	_	

	Initial Calib. Blank	 		1 T 1 L 1 L 1 L	Prepa- ration	 	 				
Analyte	(ug/L)	c¦	1	С	2	С	3	C	Blank	C¦	1 191 1
Aluminum		1 i				1 1					
Antimony		1 1		_		1 1		<u> </u>		1	1 I
Arsenic		<u> </u>		<u> </u>		1 1				-	
Barium		<u> </u>				<u>. i i i</u>		ا نــنــ		نبن	ii
Beryllium		+ +				1 1			1.000		P
Cadmium		1 1		- ! ! -		-!-!-			-1.300	i Bi	Р
Calcium		-ii				+			3.000	نن	P
Chromium	-	1 1		1 1		1 1		╌┤╎	6.000		. P
Cobalt		++-		1 1		++			0.000	ب	
Copper Iron		- 		- i - i		- 				i i	
Lead		+ +		++		1 1		╌┼╌┤╎	-	+	
Magnesium i		++		++-		++				+-1	<u> </u>
Manganese		: :		- i i		: :		- 		Ħ	
Mercury		+++		++				+		+	
Nickel		+ +		\dashv	-	++			10.000	i U	P
Potassium		11		11							<u> </u>
Selenium		!!		11		!!				1	
Silver		1 1									
Sodium		1 1		1 1		1 1					
Thallium		i i		1 1		i i					
Vanadium		<u>.i.i</u>		<u> </u>		<u>i.i.</u>		ا نـنــ	3.000		Р
Zinc		1 1		1 1		1 !		 	4.200	I BI	P
Cyanide		1 1		11		<u> </u>				1	
. '								ا نــنــ		ئــن	

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/R	<u>A</u>
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	ater):	SOIL	
Preparation	Blank Concentration	Units (ug/L or mg/kg):	MG/KG	

	Initial Calib. Blank	1			inuing Calibr Blank (ug/L)				Prepa- ration	1	
Analyte	(ug/L)	C¦	1	С	2	С	3	C	l Blank	C	! M !
Aluminum					1		I				
!Antimony					1		!				
Arsenic		<u> </u>			i		,	<u> </u>	1		
Barium						<u>.</u>	l 1		L		
Beryllium					!	_	!		l		
Cadmium		<u> </u>			! !	<u> </u>	1	<u> </u>	<u> </u>	<u> </u>	
Calcium					 	_	! !	Ц			
Chromium		1			l						<u></u> i
Cobalt		بنا			<u> </u>	_	! !	نـــٰ	L	نـــن	<u></u>
Copper		 			 	_	 	! ! ! 	 	Щ	
Iron	00.0	1			1 00.0	1	1 000	<u> </u>	- 5000		
Lead	38.0	U	38.0	_		U	38.0	빈	5.209	<u>'</u>	P
Magnesium		<u> </u>		_		_	l	! ! !!	1		
Manganese Mercury		H				<u> </u>	<u> </u> 	щ	<u> </u>	-	
Nickel		\vdash		-				ij		<u>—</u>	
Potassium				···) 	H		i i	
Selenium					<u> </u>	<u> </u>	<u> </u>	Н	<u> </u>	-	
Silver		1	- i			-					
Sodium		i						 		\dashv	
Thallium		1				_		 	<u> </u>	\square	
Vanadium	1		. 1	_							
Zinc		1							ļ		
Cyanide									1	\Box	
ı "											

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Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/R	<u>A</u>
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	ater):	SOIL	
Preparation	Blank Concentration	units (ug/L or mg/kg):	MG/KG	

Analyte	Initial Calib. Blank (ug/L)	C	C 1	ont C	inuing Calibra Blank (ug/L) 2	itio	on 3	C	Prepa- ration Blank	C	
	1	<u>i</u>		_	Г	_		i	<u> </u>	\dashv	<u></u>
Aluminum		1 1		<u></u>		_	<u> </u>	÷	<u> </u>	H	<u> </u>
Antimony Arsenic						-	<u> </u>	-	1	ij	-
Barium		++		_		닉		┿		∺	
Beryllium		1 1		<u> </u>	 	-	l		-	H	-
Cadmium		; ;		_	 	_	-	÷		ij	
!Calcium		++			<u> </u>	-	<u> </u>	\dashv	-	 	
iChromium i		+-+		_	 	4		+-1	1		
Cobalt		i i		_		ij					<u> </u>
Copper		1 1			1	7		\dashv		-	
Iron						7		+ - 1	1		
Lead		1 1	38.0	U		-					P !
iMagnesium i		1 1				ı					
Manganese		1 1						\Box			
Mercury		1 1			<u> </u>	_		1	<u></u>		
Nickel		<u> </u>			i	_i		<u> </u>	<u>i</u>	<u>i</u>	<u>i i</u>
Potassium		<u> </u>			 	_	ļ L	نٺ	<u> </u>	النا	لـــــــا
Selenium		+ +			<u> </u>	-			<u> </u>	\perp	
Silver		1 1			i i	_i	<u> </u>	نِن	<u> </u>	<u>ii</u>	<u></u>
Sodium				_		_¦		<u></u>	<u> </u>	ш	<u> </u>
Thallium		1 1	1		1	1		╁╏		\dashv	
Vanadium		++			1	_	ļ	بب	<u> </u>	ب	<u> </u>
Zinc		1 1		_	1	<u></u>	<u> </u>	┷-¦	-	∺	<u> </u>
Cyanide		1 1			1	닉	<u> </u>	+	1	+	
<u></u>		<u> </u>			<u> </u>	_i		نــنـ		نب	نــــــــــــــــــــــــــــــــــــــ

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Lab Name:	New England Test	ing Laboratory	Contract: G&H RD/	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No <u>NETL-18-1</u>
Preparation	Blank Matrix (soil/w	rater):	SOIL	
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	MG/KG	

1 1	Initial Calib. Blank	 	Continuing Calibration Blank (ug/L)						Prepa-		 	
Analyte	(ug/L)	C¦	1	С	2	С	3	c¦	Blank	c¦	M	
Aluminum	,						l I			j		j
Antimony		-				<u> </u>	1	_			<u> </u>	_
Arsenic		<u> </u>		<u> </u>		<u>. </u>	<u>i</u>	<u> </u>	<u>ii</u>	i	<u>i</u>	_i
Barium		Ш		_	<u> </u>	<u>. </u>	<u> </u>	∺	<u> </u>	_¦	<u> </u>	ᆣ
Beryllium		1 1	l			_	!	Ц	I	_	<u></u>	ᆜ
Cadmium		<u>i i</u>			i	<u>i</u> _	<u> </u>	ij	<u> </u>		<u></u>	
Calcium		\vdash		_		!	! !	Щ	1 1	_;		ᅼ
iChromium i		1		_	l	<u> </u>	<u> </u>		1	_		-
Cobalt		<u> </u>		_		<u> </u>	<u> </u>	ب	<u> </u>	نِـ	<u>i</u>	∸
Copper		'		-	 	-	 	Н	<u> </u>	¦		∹
Iron		1 1			<u> </u>		<u> </u>	H	 	¦		븏
Lead		H		<u> </u>		<u> </u>	<u> </u>	H		_į	<u> </u>	_
Magnesium Manganese					·	-	 	 i				
Mercury		\vdash				<u> </u>	<u> </u>	뭐				ᅱ
Nickel		\vdash		_	<u> </u>	<u> </u>	 	Н		\dashv		ᅼ
Potassium		i i				_	<u> </u>	i i		一		┪
Selenium		<u> </u>				ι	<u> </u>	뭐	l .	~	<u> </u>	ᆔ
Silver	5.6	В	4.0	U	4.0	U	4.0	U	0.548	υ'n	P	٦
Sodium		i i					<u>.</u> !	i		٦į		ᅼ
Thallium		$\overline{}$					1			\neg	1	ᆿ
Vanadium [1									l l	7
Zinc							!					
Cyanide		<u> </u>			<u> </u>		i				1	
·]					_

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/F	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	WATER_	
Preparation	Blank Concentration	Units (ug/L or mg/kg):	UG/L	

Analyte	Initial Calib. Blank (ug/L)	С	1		uing Calil ank (ug/l 2		3	c	Prepa- ration		M
Aluminum	<u> </u>					1 1				\dashv	
!Antimony		++		1 1		+				+	\vdash
Arsenic		- i - i		- 				-i-i i		i i	<u> </u>
Barium		† †		1 1		† †		╌┼╌┤┟		∺	
Beryllium		++		++-						+	
Cadmium		1 1		11		1 1					
Calcium		1 1		 		1 !		 			
Chromium	-	1 1		1 1		1 1		:			
Cobalt		1 1		11		1 1					
Copper		1 1		1 1		i i				\Box	
Iron		1 1		1 1		1 1					
Lead		! !				1 1					
Magnesium		1 1		1 1		1 1				11	
Manganese				<u> </u>		ii		إنب		بن	<u></u>
Mercury		1 1		 		1. 1				 - 	
Nickel		1 1		1 1		1 1		+ :			
Potassium		بنب		<u> </u>		ii		إ نِــنِـ		ښ	نِـــــــــــــــــــــــــــــــــــــ
Selenium		1 !		1 1		1 !				: :	
Silver		1 1		1 1		1 1		+	4.000	101	P
Sodium	· 	\vdots		- i - i -		÷÷				!	<u> </u>
iThallium Vanadium		1 1	<u> </u>	1, 1		1 1		+ 1		+	
!Zinc		1 1		++-		++				+	\vdash
Cyanide				- 		÷÷		<u> </u>		- -i	
l i	<u> </u>	1 1		- - -		+++		+		H	
	<u></u>										

Lab Name:	New England Test	ing Laboratory	Contract:	G&H RD/RA		•
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:		SDG No.:	NETL-18-1
Preparation	Blank Matrix (soil/w	rater):	SOIL			
Preparation	Blank Concentration	n Units (ug/L or mg/kg):		MG/KG		

Analyte	Initial Calib. Blank (ug/L)	С	C 1		inuing Calibi Blank (ug/L) 2		on 3	С	Prepa- ration Blank	C	M
Aluminum		, 								Ti.	i i
Antimony		1 1									
Arsenic	2.0	iui	2.0	U	1		1	i ;	0.277	U	F
Barium		1 1								I I	[
Beryllium		i i						ı			
Cadmium		<u> </u>				Ĺ				<u> </u>	
Calcium [1		<u> </u>	 	<u>_</u>				<u> </u>	<u> </u>
Chromium		1 1				_		1	<u> </u>	Н	
Cobalt		<u>; ;</u>		<u>.</u>	L	<u>. </u>	! !			نــــــــــــــــــــــــــــــــــــــ	<u>. </u>
Copper		1 1				<u> </u>		<u> </u>	l I	<u> </u>	I I
Iron		<u>i i</u>				<u> </u>			ļ		<u> </u>
Lead		1 1			<u> </u>	<u>. </u>			i L	iii	<u>. </u>
Magnesium		 		 	1	⊨	! 	1 1		\vdash	<u> </u>
Manganese		+ +			<u>. </u>	H			 	+	
Mercury		! !				<u> </u>		- 	<u> </u>	i i	<u> </u>
Nickel		1 1				H	 	-		 	<u></u>
Potassium Selenium		++		L	! <u>-</u>		l		<u> </u>	H	
Silver		i i	-	_		<u> </u>		- i i	i		
Sodium		1 1			l	-	l		l 	\vdash	
Thallium		+++			<u> </u>	\vdash	<u> </u>		! 	 	\vdash
Vanadium		÷÷				-		- i i			
!Zinc		1 1		L 		⊢	 			+	
Cyanide		+ +		-	L	 			 		 1
		i i				-	 	- i i	i i	ij	<u> </u>

Lab Name:	New England Testi	ng Laboratory	Contract: <u>G</u>	&H RD/RA		
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:		SDG No.: <u>I</u>	NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	WATER			
Preparation	Blank Concentration	Units (ua/L or ma/ka):	U	G/L		

Analyte	Initial Calib. Blank (ug/L)	C	1		uing Calib ank (ug/L 2		n 3	С	Prepa- ration Blank	C	М
Aluminum		Ti		1 1		1 1				一	
Antimony		1 1		<u> </u>							
Arsenic		ii	•	1 1		<u> </u>			2.000	U	Γ,
Barium				1 1							
Beryllium		1 1		i i		ii				\Box	
Cadmium											
Calcium		l I		1 1						\Box	
Chromium		i i		_i_i_		i i		<u> </u>		\Box	
Cobalt											
Copper		!!!		1 1		1 1					
Iron		<u>i i </u>		<u>i i </u>		<u> </u>				<u> </u>	
Lead		 									
Magnesium		1 1		1 1		i i			l		
Manganese		<u>i i </u>		<u> </u>		<u>: :</u>		انن			
Mercury		1		1 1		1 I					
Nickel		1		<u> </u>		ii		<u> </u>			<u> </u>
Potassium		<u> </u>		_		<u> </u>				نــٰ	
!Selenium !		1 1		1 1				1 1			
Silver		ii		<u>i i</u>		<u>i i</u>		إنن		<u>i</u>	<u> </u>
Sodium		1 1		<u> </u>		i i I		_			<u> </u>
Thallium		1 1				1 1				\Box	
Vanadium		بنب		<u> </u>		نن		ا نىپ		نـــٰ	نـــــــن
Zinc		1 1		1 1		 -				\Box	
Cyanide		1 1		<u> </u>		ii		4			<u>i</u>
		<u>i i </u>				<u> </u>		انين			

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Lab Name:	New England Te	sting Laboratory	Contract: G&H RD)/RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
Preparation	Blank Matrix (soil	/water):	SOIL	
Proparation	Blank Concentrati	on Units (ua/L or ma/ka):	MG/KG	

RUN DATE: 9/2/94

Analyte	Initial Calib. Blank (ug/L)	C	C (inuing Calibr Blank (ug/L) 2		on 3 C		Prepa- ration Blank	C	
Aluminum			1					ו ו			
Antimony								ijį			
Arsenic	2.0	Ui	2.0	U	2.0	υi] [F
Barium							1 1	7 [
Beryllium		i					i	ij			
Cadmium] [
Calcium										Ш	
Chromium		i				<u> </u>	i	ij		<u>i</u>	
Cobalt							<u>_</u>	 		╚	<u> </u>
Copper		l					1	11		Ц	
Iron		<u>i i</u>		<u> </u>		<u> </u>	<u>i</u>	<u>i i</u>		<u> </u>	<u>i </u>
Lead								1 1			l
Magnesium		i					1	1 !		\Box	1
Manganese		<u> </u>			L	نـــٰ	i	ا ز		نـــــٰ	
Mercury	 					╙		1 I 4 F		L	<u> </u>
Nickel		1				į	<u> </u>	ij			
Potassium				l i		╚		֡֡֓֞֡֓֞֡֓֓֓֓֓֞֜֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡		نا	
Selenium						∺	- !	1 L		Ц	I
Silver							i	įį		<u></u> i	
Sodium	_	\		 		 		4 F		ᆜ	<u> </u>
Thallium		1					<u> </u>	1 1			
Vanadium			}			<u></u>	<u>i</u>	ا ز		نــــٰ	Ĺ
Zinc						⊣	1	 		Ц	I
Cyanide		<u> </u>				Ļį	i	įį		щi	
i 		<u> </u>						֓֡֓֞֓֓֓֓֡֓֓֓֡֓֡֓֡֡֡֡֡֓֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡֡			L

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No <u>NETL-18-1</u>
Preparation	Blank Matrix (soil/wa	ater):	SOIL	
Preparation	Blank Concentration	Units (ua/L or ma/ka):	MG/KG	

Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper	
Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt	;
Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt	
Beryllium Cadmium Calcium Chromium Cobalt	
Beryllium Cadmium Calcium Chromium Cobalt	\neg
Calcium Chromium Cobalt	\neg
Chromium Cobalt	
Cobalt	<u> </u>
Copper I I I I I I I I I I I I I I I I I I I	
Copper	
ilron i i i i i i i i i i i i i i i i i i i	
	F ¦
Magnesium	
Manganese	<u>—</u> ;
Mercury	
Nickel	
Potassium	<u>—</u> i
Selenium	—;
	\dashv
Sodium I I I I I I I I I I I I I I I I I I I	<u>—</u> į
Vanadium	
Zinc ! !! !! !!!	
Cyanide I I I I I I I I I I I I I I I I I I I	
	7

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	ater):	WATER	
Preparation	Blank Concentration	units (ug/L or mg/kg):	_UG/L	

1 1	Initial Calib. Blank	1 1 1			uing Calil ank (ug/l		1	1 1 2 1 2 1 1 1	Prepa- ration	 	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Analyte	(ug/L)	C¦	1	С	2	С	3	C	Blank	٠ ₁	M
Aluminum		1 1		I I I I		ТТТ 1 1.					
Antimony		1 1		1 1		1 1				11	
Arsenic		<u>i i</u>		<u>i i</u>		<u>i i</u>				<u>i i</u>	
Barium		1 1		 		1 1				\sqcup	L
Beryllium		1 1		1 1		1 1					
Cadmium		<u>i i</u>		<u> </u>		<u>i i</u>		ا نــنــ		<u>i i</u>	<u></u> i
Calcium		1 !		<u> </u>		<u> </u>				\sqcup	
Chromium		<u>i i</u>		<u>i i</u>		1 1				11	
Cobalt		1 1				<u> </u>		انن		نٺ	نــــا
Copper		1 1		1 1		1 1				1	1 !
Iron		<u>i i</u>		<u>i i</u>		<u>i i</u>				<u>i i</u>	<u></u> i
Lead		1 1		<u> </u>		 		;	1.000	ĽĽ	F
Magnesium				1 1		1 1				-	
Manganese		بن				بن		ا بـــنِــ		نن	نـــــــــــــــــــــــــــــــــــــ
Mercury	 			1 1		1 1				∺	
Nickel		1 1		++		1 1					<u> </u>
Potassium		<u>i i</u>		<u> </u>		<u>i i </u>		ا نــنــ		نــنـ	<u> </u>
Selenium	<u> </u>	1 1		<u> </u>		1 1					<u> </u>
Silver		<u> </u>		<u> </u>		++					<u> </u>
Sodium		 								ij	<u></u> ;
Thallium		1 1		1 1		1 1					
Vanadium		بنب		<u> </u>		بن		إ نــنــ		بب	<u> </u>
Zinc	<u> </u>	1 1		1 1		1 1		- 		₩	
Cyanide		1 1		1 1		1 !				+	
	L	<u>: :</u>		i_i		<u> </u>		ا نـنــ		نـــنــ	نـــــــــــــــــــــــــــــــــــــ

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/R/	4
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	SOIL	
Preparation	Blank Concentration	Units (ua/L or ma/ka):	MG/KG	

RUN DATE: 9/2/94

Analyte	Initial Calib. Blank (ug/L)	C		ont C	inuing Calibr Blank (ug/L) 2		on 3	С		Prepa- ration Blank	C	
Aluminum		I İ					1	Πİ	<u> </u>		mi	
Antimony	·····	1 1					i	\neg			\Box	\vdash
Arsenic i		+ +					 	_	ļ			
Barium		11					İ	\Box				
Beryllium		; ;	i					П	i		\Box	
Cadmium		1 1		_		_		П				
Calcium		1 1				<u> </u>	i	ij	i		Ħ	
Chromium		1 1			l		i	\Box			\Box	
Cobalt		1 1					1					
Copper		1 1					i	$\overline{}$				
Iron							i	П			\Box	
¦Lead [
Magnesium		İ	i				i					
Manganese												
Mercury							l .	Ш				
Nickel		<u>i i</u>	i			_	<u>i</u>	<u> </u>	<u>i</u> _		<u>i i</u>	<u>i i</u>
Potassium		<u> </u>				<u> </u>	i L	Ш			Ш	i i
Selenium	2.0)i U i	2.01	U	2.0	U	1		<u> </u>	0.277	U	L F
Silver		<u>i i</u>				<u>. </u>	<u>'</u>	<u> </u>	<u> </u>		<u> </u>	<u></u> i
Sodium		!!					l 1		<u> </u>		 	l 1
Thallium		<u>i i</u>	i	ĺ			i		i		<u>i i</u>	<u>i i</u>
Vanadium		<u>i i</u>			_	L	<u>.</u> I	نـــٰ	L		ٺٺ	ٺــــــا
Zinc		1 1				_	l 	Ц	\vdash		\sqcup	<u> </u>
Cyanide		ii						H	<u></u>		H	<u> </u>
		<u> </u>				_	! !	النا	<u></u>		لنا	

Lab Name:	New England Testi	ing Laboratory	Contract: G&H RD/	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
Preparation	Blank Matrix (soil/w	ater):	WATER	
Preparation	Blank Concentration	n Units (ug/L or mg/kg):	UG/L	

RUN DATE: 9/2/94

Analyte	Initial Calib. Blank (ug/L)	C	1		uing Cali ank (ug/ 2		3	C	Prepa- ration Blank	C	M
Aluminum		1 i		1 1		11		Ţij		Ţ	
Antimony		1 1		1 1		1 1				\dashv	
Arsenic		1 1		1 1		1 1				\Box	
Barium		11		-i-i		1 1		<u> </u>		ij	
Beryllium		11		1 1		1 1					
Cadmium		1 1		1 1		1 1				1 1	
Calcium		1 1		<u> </u>		- 		111		ij	
Chromium		 		1 1		1 1				\Box	
Cobalt		T		1 1		1 1		77			
Copper		1 1		1 1		1 1					
Iron		1 1				1 1					
Lead		TT		1 1		1 1				\Box	
Magnesium		ii		1 1		i i				\Box	
Manganese		<u> </u>				111					
Mercury		1 1		1 1		1 1				l	
Nickel		<u>i i</u>		<u>i i</u>		<u>i i</u>		<u>i i i</u>		<u> </u>	<u> </u>
Potassium		<u> </u>				_				! ! !!	
Selenium		1 1		1 1		1 1			0.002	ĮΨ	F
Silver		<u>i i </u>		<u>i i </u>		<u> </u>				<u> </u>	
Sodium		1 1		1 1		l I					
Thallium		<u>i i</u>		ii		i i					
Vanadium		<u> </u>		11				ا نــــــــــــــــــــــــــــــــــــ		ئـــٰ	
!Zinc !		1 1		1 1		1 1					
Cyanide		ii		ii		<u>i i </u>					
<u> </u>		1 1				1 1		┷╛└			

Lab Name:	New England Testi	ng Laboratory	Contract:	G&H RD/RA		
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:		SDG No.:	NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	SOIL			
Preparation	Blank Concentration	Units (ua/L or ma/ka):		MG/KG		

Analyte	Initial Calib. Blank (ug/L)	С			nuing Calibr Blank (ug/L) 2		on 3	 	· _	C	М
Aluminum				Ţ				Ŧį		Πİ	
Antimony		i i		i			!			\Box	
Arsenic		1		i			i	7	1		,
Barium		ı		一				777			
Beryllium				i							
Cadmium											
Calcium				- !			l 1				
Chromium		i		i			i				
Cobalt							l				
Copper		!!		Ī			!		Į		
Iron		<u> </u>		i			<u> </u>	<u>i</u>	<u>i</u>	<u>i i</u>	<u></u> i
Lead							! <u>!</u>	<u> </u>	L	₩.	
Magnesium				_!	l		!		I	11	
Manganese		<u> </u>					<u>.</u>	نٺ	Ĺ	نن	نــــــــــــــــــــــــــــــــــــــ
Mercury		1 					 	-	<u> </u>	∺	<u> </u>
Nickel		1 1		_			<u> </u>	11			
Potassium	- 	<u></u>		i			<u> </u>	نب	<u>i</u>	نن	نـــــــــــــــــــــــــــــــــــــ
Selenium		<u> </u>		-			 		1	+	<u> </u>
Silver		1		_			<u> </u>	++		+	<u> </u>
Sodium	1.0		4.0		4.0			ij	0.430	 .	F
Thallium	1.0	101	1.0	01	1.0	U	! 	+-	0.138		
Vanadium	<u> </u>			- :			<u></u>		1	+-	
Zinc				-					<u> </u>	ij	<u> </u>
Cyanide			<u> </u>	+	1		l 	++	1	┼┤	

Lab Name:	New England Test	ing Laboratory	Contract: G&H RD/F	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No NETL-18-1
Preparation	Blank Matrix (soil/w	vater):	WATER	
Preparation	Blank Concentratio	n Units (ug/L or mg/kg):	UG/L	

	Initial Calib. Blank	 			uing Cali ank (ug/l				Prepa-	 	
Analyte	(ug/L)	C	1	С	2	С	3	C		c¦	1 141 1
Aluminum				1 1		1 1					
Antimony		1 1		1 1				I I		1 1	
Arsenic		<u>i i</u>		<u> </u>		<u> </u>		<u> </u>		<u>i i</u>	<u> </u>
Barium		 		1 ! 					<u> </u>	<u> </u>	! !
Beryllium		<u> </u>		1 1		1 1		1 1 3			1 1
Cadmium		<u> </u>		<u>. i i</u>		ij		- - 		<u>i i</u>	<u> </u>
Calcium		1 !		1 1							
Chromium		1 1		1 1		++				+-	
Cobalt		ijij		ijij		<u>. i i </u>		زنسنب		بب	<u> </u>
Copper		1 1		1 1		 		; 	 	+	<u> </u>
Iron		1 1		1 1		1 1				+ +	
Lead		÷÷		<u> </u>		نن		ا نــنــ		ښ	<u> </u>
Magnesium		1 1		1 1		1 1		 		+-	<u> </u>
Manganese Mercury		++				++			<u> </u>	++	
Nickel		+		- i - i -		 		-ii i		÷	<u> </u>
Potassium		i i		i i		ii		- i - i i		$\dot{f -}$;——;
Selenium		1		1 1		$\frac{1}{1}$					
Silver		++		+ +		- - 				1 1	
Sodium		 		-i-i-		i i		- - 		 	
Thallium		++-				++			1.000		F
Vanadium						1 1					
Zinc		1 1		- i - i -		11				1	<u> </u>
Cyanide		+ +		+ +		- - -				 	\Box
l		1 1		 							

Lab Name:	New England Testi	ng Laboratory	Contract: G&H RD/F	RA
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
Preparation	Blank Matrix (soil/wa	ater):	SOIL	
Prenaration	Blank Concentration	Units (ua/L or ma/ka):	MG/KG	

RUN DATE: 9/21/94

	Initial Calib. Blank	! ! !	C		uing Cali ank (ug/		i	; ; ; ; ; ; ; ;	Prepa- ration	1 1	
Analyte	(ug/L)	c	1	С	2	Ć	3	C	Blank	C	M
Aluminum		T i				1 1		 ;;			
Antimony [!!				1 1		!!!		<u> </u>	
Arsenic [ii		<u> </u>		<u>i i </u>		<u>i i i</u>		<u>i i</u>	
Barium [1 1		l I						 	<u> </u>
Beryllium 📱		1 1		İ		1 1					
Cadmium [1 1				1 1					
Calcium 📱						1 1					
Chromium [i i		<u> i </u>		i i				<u>i i</u> i	
Cobalt		1				1 1					
Copper		1 1		l		!!!					
Iron [·	1 1				<u> </u>				إنين	
Lead L		<u> </u>				<u> </u>		;		₩;	
Magnesium [!!		1		1 !				1	
Manganese [<u>i i </u>		ĿĿ		<u> </u>		ز نــنـ		زنين	
Mercury L	0.2	101	0.2	U				;	0.085		CV
Nickel		1 1				1 1				+	
Potassium [<u> </u>				<u> </u>		ا نــنــ		زنن	
Selenium L		<u> </u>		<u> </u>				_ _ 		 	
Silver		<u>i i </u>		<u> </u>		<u> </u>				++!	<u> </u>
Sodium L		- 						:		انن	
Thallium		1 1		<u> </u>		1 1				1 1	
Vanadium [<u>ii</u>		<u> </u>		<u> </u>		إ بـــنِــ		ز نب	L
Zinc		+ +		<u> </u>		1 1		;-;;;			
Cyanide [1 1				<u>i i </u>		!		1 1	

Lab Name:	New England Testin	ng Laboratory	Contract: G&H RD/	<u>RA</u>
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
Preparation	Blank Matrix (soil/wa	ater):	WATER	
Preparation	Blank Concentration	Units (ug/L or mg/kg):	UG/L	

RUN DATE: 9/16/94

Analyte	Initial Calib. Blank (ug/L)	C	C		nuing Calib Blank (ug/L 2		on 3	C!	Prepa- ration Blank	C	
1 1	()	1						i	! !	;	;
Aluminum						L					
!Antimony		1 1					l 	1	l 		
Arsenic		ii				i			<u> </u>	<u> </u>	<u>i </u>
Barium							l 1		l L		ļ :
Beryllium		1 1			-		<u> </u>	1 1	l		
Cadmium		<u> </u>		<u> </u>				نن		<u> </u>	<u> </u>
Calcium				 				1 1] 		i i
Chromium		<u>i i</u>		<u> i</u>					<u> </u>	<u>i i</u>	
Cobalt		<u> </u>					! !	ٺٺ	L		<u> </u>
Copper				<u> </u>		1	<u> </u>			1	
Iron		<u>i i</u>		<u> </u>		<u>i i</u>		<u>i i</u>		<u>i i</u>	<u>i</u>
Lead		<u> </u>		╚		<u> </u>			l L	i	<u> </u>
Magnesium		1 1					l 			1 1	1
Manganese		<u>i i</u>		نـــن		i		نـنـ		نــن	<u></u>
Mercury	0.2	101	0.2	Ш		-			0.200	12	CV
Nickel		1 1				1 1	<u> </u>			\vdash	1 1
Potassium		<u> </u>				Ŀ	L	نــنــ	<u> </u>	نــن	<u>. </u>
Selenium		! !		 		1			l 		-
Silver		<u>i i</u>								<u> </u>	
Sodium				╙		₩			! 	∺	<u> </u>
Thallium		1 1		<u> </u>] 		
Vanadium		<u>i i</u>		بَــا		ب	L	بب		نب	<u> </u>
Zinc				<u>, </u>		-	 		 	┷	<u> </u>
Cyanide		1					<u> </u>		<u> </u>		
		<u>: </u>		نـــن		نــنـــنـــنـــنـــنــــنـــنـــنــــنـــنـــنـــنـــنـــنـــنــــ		نن	<u> </u>	نــن	<u> </u>

Lab Name:	New England Testi	ng Laboratory	Contract: <u>G</u>	&H RD/RA	-
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.:	NETL-18-1
Preparation	Blank Matrix (soil/wa	ater):	WATER		
Preparation	Blank Concentration	Units (ua/L or ma/ka):	U	G/L	

RUN DATE: 9/7/94

	Initial Calib. Blank	 	Co		inuing Calibr Blank (ug/L)			1	Prepa- ration	
Analyte	(ug/L)	c¦	1	С	2	С	3	C	Blank C	¦¦ M
Aluminum		i Li					1	\equiv		
Antimony [<u> </u>					! !		I I	
Arsenic [<u>i i</u>					1			
Barium [1		1	
Beryllium 📱		i i					1		1 1	<u> </u>
Cadmium [, , , ,					1			l I
Calcium [1 1							1	i i
Chromium 🛭		ii					i i	\equiv	i i	i i
Cobalt	•						I			
Copper							l i		1	L
Iron [<u> </u>					l (1	
Lead [l I	
Magnesium [1 1					1	i	1	<u> </u>
Manganese [1			
Mercury [1 1	ı				l (_¦	1	! !
Nickel <u>í</u>		<u>i i</u>	i				<u>i </u>	i	<u>i</u> i	<u> </u>
Potassium [1	:		 <u> </u>
Selenium [!!					1		1	l ! _
Silver [<u>i i</u>					<u>i</u>		<u>i i </u>	<u> </u>
Sodium [ļ		I I	
Thallium [<u>i i</u>						i	i	<u> </u>
Vanadium [نــنـ					<u> </u>	_;	<u> </u>	i <u></u>
Zinc L							l		i .	
Cyanide [2.0	iυi	2.0	U	2.0	U	2.0	Ψį	2.000 U	<u> </u>

Lab Name:	New Engla	nd Testing Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
ICP ID Num	ber:	ICP-1	ICS Source: SPEX	

	Т	rue !!	!	nitial Found	- !	F	inal Found	
: :	Sol.	Sol.	Sol.	Sol.	;	Sol.	Sol.	
Analyte	Α	AB !!	Α	AB	%R ¦	Α	AB	%R
Aluminum	500000	500000	508500¦	509100.0	101.8	499500	499300.0	99.9
!Antimony _	1	!	<u> </u>		1	1	1	
Arsenic		<u> </u>	i		i		i	
Barium [I I		l			
Beryllium	1]		i i	!	1	
Cadmium [1				l 1		1	
!Calcium !	500000!	500000	514500	517100.0	103.4	546000!	549000.0	109.8
Chromium [i		i		i	i	1	
Cobalt		1 1	1		1 1	1		
Copper	0!	500!	10!	516.4	103.3	11!	498.5!	99.7
iron	200000	200000	182000i	183500.0	91.8	178700	181100.0	90.6
Lead	1	<u> </u>	1		1		!	
Magnesium	5000001	500000	4996001	499300.0	99.9	489100i	493100.01	98.6
Manganese [0	500	17¦	514.3	102.9	17	504.4	100.9
Mercury	1	<u> </u>	İ.		1	ĺ		
Nickel	i	1	i		i i	i	i	
Potassium [o¦	0; ;	-475¦	-365.7	1	-503	-543.0	
Selenium	Ī	<u> </u>	İ		i		!	
Silver			i		i	i	i	
Sodium	0!	0; ;	785	834.0		700	589.2¦	
Thallium	i	i i	i		i	i	i	
Vanadium [1		1			1		
Zinc	<u> </u>		!		i	!	i	
;	i	1 1	<u> </u>			<u> </u>		

Lab Name:	New Engl	and Testing Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL-18-1
ICP ID Num	ıber:	ICP-1	ICS Source: SPEX	

True			1	Initial Found			Final Found		
i	Sol.	Sol.	Sol.	Sol.	i	Sol.	Sol.		
Analyte	Α	AB ¦	l A	AB	%R	Α	AB	%R	
Aluminum	ı				, i	l	1		
Antimony 📋	0!	01	-22	36.7	!	-40!	-43.4		
Arsenic 🗀	i	<u> i</u>	<u>i i i i i i i i i i i i i i i i i i i </u>		<u> </u>	<u>i</u>	i		
Barium [1 1		l 1 L 1	! !			
Beryllium 📋		1				1	!		
Cadmium [1 1				
Calcium [1				[
Chromium [i	7	1		i i	i	i		
Cobalt	1	1	1	-	1	1			
Copper [!				1 1	1	!		
Iron	i		1 1			1	i		
Lead	1				<u> </u>		l 1		
Magnesium [i	i	i		1	1	i		
Manganese [1			1				
Mercury	1]		1	1	I		
Nickel _	i	i	i i		i	i	i		
Potassium [, ,		I I	1	1		
Selenium [!	!	!		!!	1	1		
Silver			· i				1		
Sodium [1	1	!		1 1	i	l I		
Thallium 📋	i	ī	i		i	i	i		
Vanadium [1		, , , , , , , , , , , , , , , , , , ,		1 1				
Zinc	<u> </u>	!	į į		i		!		
,- 1	1		} 		1				

Lab Name:	New Engla	nd Testing Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL-18-1
ICP ID Num	nber:	ICP-1	ICS Source: SPEX	

Analyte	Sol. A	True Sol. AB	Sol.	Initial Found Sol. AB	%R	Sol.	Final Found Sol. AB	%R
Aluminum	1				·] 	
Antimony	!		1		! 	 		
Arsenic	1				1	<u>i</u>	i i	
Barium	0¦	500	24	527.2	105.4	24	555.3	111.1
Beryllium	<u> </u>	-			l I	! !	1 1	
Cadmium	<u> </u>		1		<u> </u>	<u> </u>	! !	
Calcium						<u> </u>	 	
Chromium	<u> </u>		1 1		<u> </u>	<u> </u>	! ! 1 1	
Cobalt	 		 		<u>. </u>	<u>!</u>	1 1	
Copper Iron	- i		 		-	!	!	
Lead			 		!]	1 .	1 1	
Magnesium	<u></u>					<u> </u>	1	
Manganese	 	i	<u> </u>			:	 	
Mercury	1		1		! 	1	1 1	
Nickel	-				! !	 	 	
Potassium	1				· · · · · · · · · · · · · · · · · · ·	<u> </u>	1	
Selenium i	ı	1	i		<u> </u>	l	i i	
Silver	i				 	1	 	
Sodium	İ		1		!	1	1	
Thallium	i				Ĭ .	i	i i	
Vanadium	1				i		1	
!Zinc	!	ı	1			1	1	
i	1	1	i			ì	i i	

Lab Name: New Engla		nd Testing Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
ICP ID Num	ber:	ICP-1	ICS Source: SPEX	

Analyte	True Sol. Sol. A AB		Initial Found Sol. Sol. A AB %R			Final Found Sol. Sol. A AB %F		
Aluminum	, · · · I	i i i	T		· · · · · · · · · · · · · · · · · · ·	1	· · · · · · · · · · · · · · · · · · ·	
!Antimony L		 	1		. !	1		
Arsenic _	i	i i	i		i	í	i	
Barium	I		I					
Beryllium	01	500	0		104.0	01	515.7	103.1
Cadmium	o¦.	1000	15	1036.0	103.6	12	1035.0	103.5
Calcium L		I	!		1			
iChromium i	0i	500	12i		103.6 i	12i	522.1i	104.4
Cobalt	0	500	15¦	524.7	104.9	12	524.3	104.9
Copper		l I	!		1	I	<u>!</u>	
Iron _	i	i i	<u> </u>		i	<u>i</u>	<u> </u>	
Lead		! ! ! !	L				<u>.</u>	
Magnesium	l l		· ·		1	. !	İ	
¦Manganese [<u> </u>		i_		<u> </u>			
Mercury						I		····
Nickel	<u>0i</u>	1000	1i	1001.0	100.1	-8i	1010.0	101.0
Potassium [<u> </u>	1		
Selenium	1		. !			!	1	
Silver	<u>i</u>		i		i	i	<u>i</u>	i
Sodium								
Thallium	<u> </u>		i		i	i i	i	į
Vanadium [0;	500	0	507.5		<u>-1;</u>	516.1	103.2
Zinc	01	1000	56	1050.0	105.0	61	1067.0	106.7
<u>i</u>	<u> </u>	i <u>i</u>	i_		<u>i</u>	i	i	i

Lab Name:	New Engl	and Testing Laboratory	Contract: G&H RD/RA	,
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL-18-1
ICP ID Num	ber:	ICP-1	ICS Source: SPEX	

DATE:

9/1/94

		True		Initial Found	! !	Final Found			
	Sol.	Sol.	Sol.	Sol.	I I	Sol.	Sol.		
Analyte	Α	AB	Α	AB	%R	Α	AB	%R	
Aluminum									
Antimony [!!!	!		ŀ		l.	-	
Arsenic			ŀ						
Barium !			1		Ī				
Beryllium [i				i		
Cadmium [1 1	1						
Calcium		1	1				i		
Chromium [i				
Cobalt [Ţ				
Copper i		1	i		1		i		
Iron [1 1			1				
Lead !	0	1000	-91	930.7	93.1	-55	888.2	88.8	
Magnesium [i						
Manganese [, ,	- !		1				
Mercury		;	i		i		i		
Nickel		 	1						
Potassium [ı				
Selenium -			i		1		1		
Silver		1 1	1		1				
Sodium !		<u> </u>	i						
Thallium			1						
Vanadium [•	, , , , , , , , , , , , , , , , , , ,	1		i		1		
Zinc	•	·	i				1		
<u> </u>		 	•				1		

Lab Name:	New Engla	and Testing Laboratory	Contract: G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
ICP ID Num	nber:	ICP-1	ICS Source: SPEX	

Analyte	Sol. A	True Sol. AB	Sol. A	nitial Found Sol. AB	%R	Sol. A	Final Found Sol. AB	%R
Aluminum]	
Antimony 📋					<u> </u>		1	
Arsenic			i		i		<u>i</u> i	
Barium [····	1 1	
Beryllium 🗓			i		!		1 1	
Cadmium [<u> </u>		<u>i i</u>	
Calcium _								
Chromium 📋		<u> </u>	i		i		1 1	
Cobalt [<u> </u>	
Copper [<u> </u>		1		1 1	
Iron [<u>i i</u> į	i				<u>i i</u>	
Lead					 			
Magnesium [!				1 1	
Manganese [<u> </u>	i				<u>i i</u>	
Mercury L							· · · · · · · · · · · · · · · · · · ·	
Nickel [i i	i				1	
Potassium [i					
Selenium 📮			<u> </u>				1 1	
Silver [0	1000	0	924.6	92.5		0 920.6	92.1
Sodium 📙		, , , , , , , , , , , , , , , , , , ,			 		1 1	
Thallium i		<u> </u>	i		<u> </u>		1 1	
Vanadium [<u> </u>	<u></u>				<u>i</u> i	
Zinc !		!!!	!		!!!		!!!	

U.S. EPA - CLP 5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

1		
ı	01 00110	
1	SL-08MS	

Lab Harric.	TYCVY England Tooli	ig Laborati	<u></u>	00,,,,,,				 -
Lab Name:	New England Testin	ng Laborato	nrv	Contract: (G&H RD/RA	SL-USIMS	>	

 Lab Code:
 RI010
 Case No.:
 E0831-02
 SAS No.:
 SDG No.:
 NETL-18-1

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 73.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

	Control	I I		Ţ				
Analyte	Limit	Spiked Sample	l Sample	H	Spike		i 1	
<u>i</u> i	%R	Result (SSR) C	Result (SR)	Ci	Added (SA)	%R	Q	
Aluminum		l 1	! !1					NR
!Antimony !	75-125	110.9882	0.00001	U	141.10		_	Р
Arsenic	75-125	19.6101	10.9748		9.33			F
Barium	75-125	651.1813	20.6475	В¦	561.35	112.3		Р
Beryllium	75-125	16.2606	0.1860		13.86			Р
Cadmium	75-125	16.4497	0.0000	υ¦	14.08	116.8		Р
Calcium		1		ĺ				NR
Chromium	75-125	81.4922i	11.3468i	i	56.08	125.1		Р
Cobalt	75-125	164.8752	1.1161	Β¦	139.93	117.0		Ρ
Copper	75-125	! 88.1099!	15.0671	Į.	70.86	103.1		Р
Iron		i	i	i				NR
Lead	75-125	209.4973	51.2653	1	139.98	113.0		Р
Magnesium		i i	i i	į			ı	NR
Manganese [75-125	204.5813	42.7831		139.45	116.0		Р
Mercury	75-125	1.8933	0.4029	Į	1.61	92.6		CV
Nickel	75-125	i 167.9004i	0.0000	Ui	139.70	120.2		Р
Potassium				1				NR
Selenium	75-125	5.7220	0.9301		4.67	102.7		F
Silver	75-125	13.6135	0.0000	U	13.86	98.2		Р
¦Sodium [!	[]	T				NR
iThallium i	75-125	9.9471i	0.0000i	Ui	9.33	106.6		F
Vanadium (75-125	185.6736	18.2293	1	140.07	119.5		Р
Zinc	75-125	184.1610	32.9244	- !	139.48	108.4		Р
Cyanide	75-125	36.4000	0.0000	Ui	35.74	101.8		С
				T				

Comments:		
	•	

U.S. EPA - CLP 5B POST DIGEST SPIKE SAMPLE RECOVERY

EPA	01	NAD.		NIC
CPA	S۲	NVIP	ᆫ	INC

		POST DIGEST	I SPIKE SAMPI	_E }	RECOVERY				
Lab Name:	NEW ENGLAN	D TESTING LABORATOR	RY	_	Contract:	G&H RIFS		SL-08	1
Lab Code:	RI 010	_ Case No.:	E0831-02	-	SAS No.:		. ;	SDG No.	NETL-18-
Matrix (soil/	water):	SOIL				Level (low/med):			LOW
		Concentration Uni	ts: ug/L						
Analyte	Control Limit %R	Spiked Sample Result (SSR) C	Sample Result (SR)	С	Spike Added (SA)		Q		
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide									
Comments:									
							_		

FORM V (PART 2) - IN

U.S. EPA - CLP DUPLICATES

EPA SAMPLE NO.

ı		
i	SL-08MSD	
ı	OL-OUNIOD	

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract: G&H RD/RA

SAS No.: _____

SDG No. NETL-18-1

Lab Code: RI 010 Matrix (soil/water):

SOIL

Level (low/med):

LOW

% Solids for Sample:

74.1

% Solids for Duplicate:

76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Case No.: ___E0831-02

į	Control			11	İ	1	
Analyte	Limit	Sample (S) C	Duplicate (D)	Cii	RPD i	Q	M
Aluminum		5712.4734	6470.4838	<u> </u>	12.4		Р
Antimony [10.6028iU	10.2222	TU [1		Р
Arsenic		10.9748	10.1816		7.5		F
Barium !		20.6475 B	21.3411	! B !	3.3		Р
Beryllium		0.1860 B	0.1793	B	3.7		Р
Cadmium [<u>_</u>	0.7441 U	0.7173	<u> </u>			Р
Calcium [i	480.2868iB	319.9374	i B i	40.1	П	Р
Chromium [1	11.3468	11.2982		0.4		Р
Cobalt		1.1161!B	1.2554	! B !	11.7	\Box	Р
Copper [15.0671	11.6569	 	25.5	\mathbf{T}	Р
Iron		5429.7329	5448.2621		0.3		Р
Lead	i	51.26531	41.7856	ī ī	20.41		F
Magnesium [419.0883 B	431.6645	B	3.0		Р
Manganese [l l	42.7831	40.8889	<u> </u>	4.5		P
Mercury [0.1	0.4029i	0.3493		14.3		. CV
Nickel		1.8601 U	3.5867	<u> </u>	63.4		Р
Potassium !	• [65.8488!U	63.4853	ŢŪŢ			Р
Selenium [0.9	0.9301	0.9551	, В ,	2.7		F
Silver		0.7441 U	0.7173	<u> </u>	- 1		Р
Sodium i		113.84021B	91.6413	i B	21.6		Р
Thallium		0.1860 U	0.1802	70 [1		F
Vanadium 🕺	9.3	18.2293	18.1131	<u> </u>	0.6	\Box	Р
Zinc		32.9244	26.5419	 	21.5	F	Р
Cyanide [0.3000 U	0.3000	70 [С
ī					1	\vdash	

U.S. EPA - CLP 7 LABORATORY CONTROL SAMPLE

Lab Name:	NEW ENGLAND TESTING LABORATORY	Contract: G&H RD/RA
	· · · · · · · · · · · · · · · · · · ·	

Lab Code: RI 010 Case No.: <u>E0831-02</u> SAS No.: <u>SDG No.: NETL-18-1</u>

LCS Source:

LEEMAN/SPEX

Aqueous LCS Source: HG

JOHNSON & MATHEWS

Aqueous LCS Source: CN

` FISHER

1	Δ	queous (ug/	L) ¦	Solid (mg/kg)						
Analyte	True	Found	%R	True	Found	c`	Limits		%R	
Aluminum		1	;	1381.9	1300.4	T	80.0	120.0	94.1	
Antimony !		!	l I	68.81	69.21	1	Î		100.6	
Arsenic		1	i	2.8	2.8	·····	80.0	120.0	101.0	
Barium ¦			!	1381.9	1319.1	i	80.0!	120.0	95.5	
Beryllium i		i	i	34.5i	33.5i	i	80.0i	120.0	97.0	
Cadmium		1 1		345.3	324.2		80.0	120.0	93.9	
Calcium !		!!!	į.	35773.5!	33998.6	<u> </u>	80.01	120.0	95.0	
Chromium i		i	i	141.3	128.6		80.0	120.0	91.0	
Cobalt		[345.7	319.6		80.0	120.0	92.4	
Copper i		! !	ı	172.91	153.11	i	10,08	120.0	88.6	
Iron		I I	1	692.0	614.0	1	80.0	120.0	88.7	
Lead !		1 1	Ī	2.8	2.8!	i i	80.0!	120.0	102.0	
Magnesium i			i	34675.41	31160.21	i	80.0i	120.0	89.9	
Manganese		1		207.2	188.5		80.0	120.0	91.0	
Mercury !		! !	!	0.3!	0.4	1	80.01	120.0	102.0	
Nickel		l [i	552.5	517.1	1	80.0	120.0	93.6	
Potassium ¦		l !		34530.4	31788.7¦	į.	80.0	120.0	92.1	
Selenium i		1	i	2.71	2.71	i	80.01	120.0	99.5	
Silver		i		139.2	69.5	1	1		50.0	
Sodium !		l [34530.4!	32272.1!		80.0	120.0	93.5	
Thallium i		i	i	2.8i	2.8i	i	80.0	120.0	102.5	
Vanadium		<u> </u>	I	345.3	320.8 ¹		80.0	120.0	92.9	
Zinc !				276.1!	243.1		80.01	120.0	88.0	
Cyanide	100.0	96.40	96.4		<u> </u>					

FORM VII - IN

U.S. EPA - CLP 7 LABORATORY CONTROL SAMPLE

Lab Name: NEW ENGLAND TESTING I	ABORATORY	Contract: G&H RD/RA	
Lab Code: RI 010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL-18-1</u>
LCS Source:	LEEMAN/SPEX		
Aqueous LCS Source: HG			
Aqueous LCS Source: CN			

FOR LEAD BY ICP

	Aqueous (ug/L)			Solid (mg/kg)					
Analyte	True	Found	%R	True	Found	C	Limits		%R
Aluminum		T*** !		r	- Τ	- I			
Antimony !		!	1	1	I	!	!		
Arsenic					i	i	i		
Barium				1	1	I			
Beryllium i		i	i i	i	i	i	<u> i </u>		
Cadmium				i		i	i		
Calcium !		1		1			1		
Chromium			i	i	i	i	i		
Cobalt		I	1	· · · · · · · · · · · · · · · · · · ·					
Copper !		1	l l	1		l	<u> </u>		
lron :		1		<u>i</u>	i	i	i		
Lead		1	l I	345.3	313.8		276.2¦	414.4	90.
Magnesium i		i	i i	1	1		1		
Manganese			i I L		i				
Mercury !		1	l I			!			
Nickel		i	<u>i</u>	i	i	i	i		
Potassium !		<u> </u>	l		I	 			
Selenium !		1	l l	!		!			
Silver		1	<u> </u>	i_	i	<u> </u>	i		
Sodium !		1	 			<u> </u>			
Thallium i		<u>i j</u>	<u>i</u> i	<u>i</u>	1	i	<u> </u>		
Vanadium		<u> </u>		i	1				
Zinc !		1	1	<u>_</u>			<u>. </u>		
Cyanide		<u> </u>	i	i	1	i	i		

FORM VII - IN

U.S. EPA - CLP 8 STANDARD ADDITION RESULTS

Lab Name:	NEW ENGLAND TESTING	LABORATORY	Contract: <u>G&H</u>	I RD/RA
Lab Code:	RI 010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: NETL-18-1

Concentration Units: ug/L

EPA Sample		0 ADD	1 ADD		! ! 2 ADD		1 3 ADD		I I I Final	1	1 !
No.	An		CON	ABS	CON	ABS	CON	ABS	Conc.	ļ ! r	Q
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FORM VIII - IN

U.S. EPA - CLP 9 ICP SERIAL DILUTION

EPA SAMPLE NO.

Lab Name:	NEW ENGLAND TE	ESTING LA	BORATORY	Contract: G&HRD/RA		SL-08	
Lab Code:	RI 010		Case No.: <u>E0831-02</u>	SAS No.:	_ s	OG No.:	NETL-18-
Matrix (soil/	water):	SOIL			Level	(low/med)	: LOW

Concentration Units: ug/L

,	LI II	Serial	!!	% !		
	II Initial Sample		ii ii	Differ-		
Analyte	Result (I) CII	Result (S)	c ¦¦	•		M
Aluminum	30710.00	32230.00		4.9	-	P
Antimony	57.00 01	0.00	 	4.5		P
Anumony	 					NR
	11 11	127.50		15.0		P
Barium	110.90 B		 !-			
Beryllium	1.10 BI		<u> </u>		—	Р
Cadmium	1.90 Bii	5.50	<u> </u>	189.5	1-1-	Р
Calcium	2582.00	2737.50		6.0	<u> </u>	Р
Chromium	61.201 11	76.50	1 1	25.01		Р
Cobalt	6.30 B	0.00	<u>. i U ii</u>	100	<u>i_</u>	Р
Copper	¦! 80.60¦ <u> </u> !	86.00	1 11	6.7		Р
lron	29190.00i ii	30990.00	i ii	6.2i	ii	P
Lead			1 11			Р
Magnesium	2253.001 11	2409.00	1	6.9		Р
Manganese	230.00	242.50	- 	5.4		Р
Mercury	!! !!		11			NR
Nickel	10.001UI	0.00	 	i		Р .
Potassium	354.00 U	0.00	- U :			Р
Selenium	il ili					NR
Silver	4.00iUli	0.00	 			P
Sodium	II 613 30 E)	1862.00	B	204.1		P
Thallium	II		<u> </u>	1	-	NR
Vanadium	97.90	101.00	1 11	3.2		P
Zinc	177.40	201.00		13.3		Р
	<u>i i i i i i i i i i i i i i i i i i i </u>		<u> </u>		ii	

U.S. EPA - CLP 9 ICP SERIAL DILUTION

FPA	SAMPL	E NO
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Lab Name:	NEW ENGLAND T	ESTING LABORATORY	Contract: G&HRD/RA	SL-12	
Lab Code:	RI 010	Case No.: <u>E0831-02</u>	SAS No.:	SDG No.:	NETL-18-1
Matrix (soil/	water):	SOIL		Level (low/med):	LOW

Concentration Units: ug/L

	11	1 00.101	11	%	11 1 11 1	
	ii Initial Sample i		C II	Differ-	11 1	
Analyte	Result (i) C		C ¦¦	ence	Q	М
Aluminum		· · · · · · · · · · · · · · · · · · ·	- 			Р
Antimony				.,		Р
Arsenic	ii I I		i ii		7/ /	NR
Barium	1	[]	1 11			Р
Beryllium	il i	!	!!!		11. 1	Р
Cadmium	11 1 1	[Р
Calcium	1					Р
Chromium	ii i i	l	1 11		7, 7	Р
Cobalt		1			7,	Р
Copper	11 1 1		 		11 1	Р
Iron	 		1 1		11 1	Р
Lead	1420.00	1395.00		1.	8, 7	Р
Magnesium	11					Р
Manganese	 	1	1 11		7,	Р
Mercury						NR
Nickel	ii i i i					Р
Potassium			1 11		7,——	Р
Selenium	11 1 1		1			NR
Silver	11 1		1 1		11 1	Р
Sodium	1					Р
Thallium	ii i i					NR
Vanadium		1	 		→ 	Р
Zinc		i	1			Р

SDG No.: NETL-18-1

U.S. EPA - CLP 13 PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract: G&H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.:

Method:

P

EPA	I		
Sample	Preparation	Weight	Volume
No.	Date	(gram)	(mL)
SL-01	08/31/94	1.45	200
SL-03	08/31/94	1.45!	200
SL-04	08/31/94	1.451	200
SL-05	08/31/94	1,46	200
SL-6/7	08/31/94	1.45!	200
SL-08	08/31/94	1.451	200
SL-08MS	08/31/94	1.45	200
SL-08MSD	08/31/94	1,46	200
SL-10/11	08/31/94	1.451	200
SL-12	08/31/94	1.45	200
SL-13	08/31/94	1.45	200
<u> </u>	08/31/94	1.451	200
SL-15	08/31/94	1.45	200
SL-25	08/31/94	1.45	200
LCSS	08/31/94	1.451	200
LCSS-SB	08/31/94	1.451	200
FIELD BLANK	08/31/94		100
PBS	08/31/94	1.46	200
PBW	08/31/94 i		100
			·
		1	
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FORM XIII - IN

SDG No.: NETL-18-1

U.S. EPA - CLP 13 PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract: G&H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.: _____

Method:

F

EPA	i	i i	
Sample	Preparation	Weight	Volume
No.	Date	(gram)	(mL)
		i i	
SL-04	08/31/94	1.46	200
SL-6/7	08/31/94	1.45	200
SL-08	08/31/94	1.45	200
SL-08MS	08/31/94	1,45	200
SL-08MSD	08/31/94	1,46	200
LCSS	08/31/94	1.461	200
LCSS-AS	08/31/94	1.45	200
FIELD BLANK	08/31/94		100
PBS	08/31/94	1,451	200
PBW	08/31/94	i i	100
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FORM XIII - IN

ILM02,0

U.S. EPA - CLP 13 PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: <u>E0831-02</u> SAS No.: _____ SDG No.: NETL-18-1

Method: CV

EPA]	i I	i i
Sample	Preparation	Weight	. Volume
i No. i	Date	i (gram)	i (mL) i
1] 	i !
FIELD BLANK		İ	100
PBW	09/16/94	 	100
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FORM XIII - IN ILM02.0

U.S. EPA - CLP 13 PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Method: CV

EPA	<u> </u>		
Sample	Preparation	Weight	Volume !
No.	Date	(gram) i	(mL) i
l L		l !	
SL-04	09/21/94	0.226	100
SL-6/7	09/21/94	0.222	100
SL-08	09/21/94	0.211	100
SL-08MS	09/21/94	0.212i	100
SL-08MSD	09/21/94	0.209	100
LCSS	09/21/94	0.222	100
PBS	09/21/94	0.234	100
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FORM XIII - IN ILM02.0

U.S. EPA - CLP 13 PREPARATION LOG

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G&H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Method: C

EPA			1
Sample	Preparation	Weight	Volume
No.	Date	(gram)	(mL)
1		! `` ′ !	` ′
SL-04	09/07/94	5.029	100
SL-6/7	09/07/94	4.894	100
SL-08	09/07/94	5.019	100
SL-08MS	09/07/94	4.791	100
SL-08MSD	09/07/94	5.042	100
FIELD BLK	09/07/94	!	100
PBW	09/07/94		100
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FORM XIII - IN ILM02.0

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: <u>E0831-02</u>

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

ICP-1

Method:

Р

Start Date:

09/06/94

End Date:

09/06/94

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EPA I Sample No.	D/F	Time	% R				C¦C¦C D¦A¦I										A G				Z¦ N¦	
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S0	1.00	1041		¦X,			¦X¦	ı	¦X¦	ΧŢ	- J	ΧĽ	X!	1	¦Χ			Χ¦		I	\Box	\Box
S0	1.00	i 1043 i		įΧ			įχį	i	iΧi			Xi)	•	1	ŧΧ			Χi	Ī	ī	<u></u>	
S	1.00	1047		X			¦X¦		IX	Χ¦	L	ΧÜ	ΧĽ		¦Χ		_	X		i		
S	1.00	! 1049 !		ļΧ			!X!	1	!X!		I	ΧĻ	ΧŢ	1	ļΧ			Χļ	1	1	1	二
S	1.00	i 1051 i		īΧ			iXi	ī	ixi		i	Xi	Χij	i	iΧ			Xi	i		i	\equiv
ICV	1.00	1102		X			X	Т	ŢΧ¦	X_1^{Γ}		X_{Γ}^{Γ}	ΧĽ		¦Χ			Χ¦		T		
ICB	1.00	1112		İΧ			įΧį	Ī	iχi			Χij		Ţ	įΧ	•		Χı	I	I	I	三
CCV	1.00	1134		IX			ίΧi	I	ΙXΙ		Ī	ΧÜ	Χ¦	I	ΪX			X	Ī			
CCB !	1.00	! 1142 !	•	¦X¦			¦X¦	I	¦X¦	Χ¦	Ţ	Χ¦	ΧĽ		¦Χ			X¦		I		\exists
ICSA	1.00	1146		iΧ			iXi	i	iΧi		Ī	Xi	Χi	ī	iΧ			Χi	i	i	ī	\Box
ICSAB	1.00	1152		X	1		¦X¦	Ţ	꾾	X_{Γ}^{Γ}		$X_{\rm L}^{\rm L}$	Χ¦		¦Χ			Χ¦	1	I		二
CRI	1.00	1202		<u>! X !</u>			!X!	1	!X!	Χŀ	ī	X!	Χ!	!	!Х			Χļ	1	Ī	·	\equiv
PBS	1.00	1211		IX			ixi	T	ixi	Χï	i	ΧÜ	Χï	i	iχ			Xi	i	ī	i	乛
LCSS	1.00	1217		¦X;			¦X¦	Ţ	ŢX	Χ¦	Ţ	X_{i}^{Γ}	Χ¦	Ţ	ŢΧ			Χ¦		I	コ	\Box
SL-04 !	1.00	! 1224 !		ΙX			įΧį	ī	ιXι			Xį)		ļ	įΧ			Χı	I	ī		
SL-6/7	1.00	1230		X			X	\top	ΪXΪ	Χ¦	ı	XL	Χï		¦Χ			X		\perp	\exists	\Box
SL-08 !	1.00	1238		¦X			!X!	1	¦X¦	Χ¦	I	Χ¦	ΧŢ	Ţ	ŢΧ			Χ¦		1	1	\exists
SL-08L	5.00	i 1247 i		iΧ			iXi	i	iXi			Χi		ĭ	ìΧ			Χi	i	ī	i	\neg
CCV	1.00	1257		X			¦Χ¦	1	끊	ΧĽ	Ţ	XL	Χ¦	1	¦Χ	1		Χ¦	I	T	T	コ
CCB	1.00	! 1303 !	***	!X!			!X!	1	İX	X!	į	Χį	Χį	!	İΧ			X!	<u> </u>			\equiv
SL-08MS	1.00	1309		ΪX			-ixi	1	ΪXΪ	Хï	i	Xi	Χï	ī	ίX			Xi	i	i	\equiv i	\Box
SL-08MSD	1.00	1317		¦X¦			¦x¦	1	¦X¦	Χ¦	Ţ	\overline{X}_{i}^{T}	ΧĻ	Ţ	ŢΧ			X	Ţ	ヿ	Ţ	乛
PBW	1.00	i 1324 i		įΧ			įΧι	Ī	iΧi	Χī	Ī	Xī.	Χī	Ī	įΧ		i	Χi	i	ī	Ī	\equiv
FIELD BLANK	1.00	1329		X			X	1	TX	굯	1	X	Χ¦	ī	¦Х			X	1	Ţ	╗	乛
ICSA !	1.00	! 1334 !		!X!			!X!	Ī	!X!	X!	!	X!	Χ!	Ţ	!Х	!		Χ¦	į	1	- !	_
ICSAB	1.00	1339		iΧ			ixi	i	iXi	<u> Xi</u>		ΧÜ	<u> </u>		ix			Xi	i	i		
CRI	1.00	1343		¦Χ		1	'X¦		¦X¦	Χ¦	_ 1	Χ¦	Χ¦	1	¦X			X			Ţ	_
CCV	1.00	! 1349 !		İΧ			įΧi	!	įΧį	Χİ	!	X!	ΧŢ	L	ļΧ		!	Χļ	ļ	Ţ	_!	
CCB	1.00	1355		IX			ixi	i	ixi	Xi	7	ΧÜ	ΧÏ	i	ίX	<u> </u>		X	i	ī		
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FORM XIV - IN

Lab Name:	NEW ENGLAND TESTING LABORATORY	Contract:	G & H RD/RA	

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/07/94 End Date: 09/07/94

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EPA Sample No.	D/F	Time	% R	A			-				-	C					-			K	: _ :	A	N A	T	۷		C
S0	1.00	1820			X	i	i	i																			
S0 ;	1.00	1821 ;			X¦	_;	ī												l i								
SO i	1.00	i 1821 i			Χi	ī		- 1		\Box						ī	i		ī	П	i						\Box
S10	1.00	1823			X	7	i	1									l				1						
S10 !	1.00	! 1823 !			X!	-	1										l .		ļ L	i 	l I						
\$10	1.00	1824 i			Χi	i	i	i	Ī																		
ICV	1.00	1827			X¦																						
ICB !	1.00	! 1830 !		1	Χı	ļ	ļ	1		. !					l [<u> </u>	l .			!							
CCV	1.00	1833			X	i		-									i										
CCB !	1.00	1835		1	X	-									l .	l 1	l .		l L	l 	i				1 1	l	
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ICSAB	1.00	1839	·		X	7		1													l						[]
CRI !	1.00	! 1851 !			X!	į											<u> </u>				1						
PBS	1.00	1853			Xi	i		ī									<u> </u>										
LCSS	1.00	1857			X	7	7												ı		1						
SL-04, I	1.00	i 1901 i		1	Χı					1	Ī						!				1		1				
SL-6/7	1.00	1904			X	7	╗																				
SL-08 !	1.00	! 1908 !		!	X!	Ţ																					
SL-08L	5.00	i 1910 i			Xi	i	ī	ī			i					i	i .										
CCV	1.00	1913			X	7	-														i						
CCB	1.00	! 1917 !			X	ī																					
SL-08MS	1.00	1919			Xi	i	i	-								i											
SL-08MSD	1.00	1924			X	Ţ	٦														[.						
PBW i	1.00	1926			Χi	i	- 1	1		ı							i				1						
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ICSA !	1.00	! 1933 !		1	X!	į	!																				
ICSAB	1.00	i 1936 i		1	Xi	i	ij																				
CRI	1.00	1939			X	-	7										I				I						
CCV	1.00	! 1942 !		!	Χį	į		i			- 1						<u>. </u>			_	_						
CCB	1.00	1945		1	X	1	1									· ·	<u> </u>	<u> </u>		i _							
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PAGE 2 OF 2

FORM XIV - IN

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

ICP-1

Method:

Р

Start Date:

09/09/94

End Date:

09/09/94

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Sample No.	D/F	Time	% R	A		A S	B¦ A¦		C	C¦C A¦R	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				M			K	S	A G	N	T	V	Z	C
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S20	1.00	! 1706 !		ļ	!	<u> </u>	X!			- !	!	!	1	!				<u> </u>							
S20	1.00	i 1706 i		ī		\Box	Χi			ī	i	ī	i	i											
ICV	1.00	1711		1		1 1	X¦				Ţ		1	1	1				1 1						
ICB !	1.00	! 1716 !		!	!	!!	Χį	-	į	!	Ī	!	!	i		. 1									
CCV	1.00	1718		1	i -	П	Xi				ï	1	1	1											
CCB !	1.00	! 1721 !		1	<u> </u>	!!	X!			Ţ	Ţ	1	<u> </u>	i					!!		- 1				
ICSA	1.00	i 1723 i		i			Xi	ī		<u> </u>	i	ī	i	i											
ICSAB	1.00	1725		1		1 1	\overline{X}				Ţ	7	Ţ	1							1			[]	
PBS	1.00	! 1728 !		İ		!	Χİ	i	- 1	i	ī	Ţ	İ	<u> </u>											\Box
LCSS	1.00	1732				 	Xi	_		1	ī	i	1						1 1						\Box
SL-04	1.00	1737				-	Χ¦	Ţ	1		Ţ	Ţ	Ţ								- 1				
SL-6/7 i	1.00	i 1740 i		ı		-	χi	ī	1	ī	ī	ī	1	ī	1					i					<u> </u>
SL-08	1.00	1743		1			X			1	1	7	1	<u> </u>	1										
SL-08L	5.00	1745		1		1	X!	Ī	ı	Ţ	Ţ	Ţ	Ī	i							-				ı
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CCB	1.00	1750		1			X¦	I		I	-	-	Ī						1						
SL-08MS	1.00	! 1756 !		l I			X			<u> </u>	Ī	Ī	!	<u> </u>											\equiv
SL-08MSD	1.00	1759		1			Χï	i		i	ī	T	i	ı					1 1						\Box
PBW	1.00	1802		1		 	Χ¦		Ţ	-	Ţ	7	Ţ												
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PAGE 2 OF 2

FORM XIV - IN

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Instrument ID Number: ICP-1 Method: P

Start Date: 09/09/94 End Date: 09/09/94

]]		1 1		Analytes	
EPA I		1 1			
Sample	D/F	Time	% R	A;S;A;B;B;C;C;C;C;C;F;P;M;M;H;N;I	
No.				L B S A E D A R O U E B G N G	¡E¡G¦A¦L¦ ¡N¦N¦
S0	1.00	1408			THE TRIVE
S0 ;	1.00	1410			
S0 i	1.00	i 1412 i			i i i i iXiXi
S	1.00	1416			
S !	1.00	! 1419 !			! ! ! ! X!X!
S	1.00	1421 i		i i i i i i i i i i i i i i i i i i i	i i i i i i XiXi
ICV	1.00	1432			
ICB !	1.00	! 1439 !		i i i i iXiXi iXiXi i i i i i iXi	i i i i iXiXi i
CCV	1.00	1444			T T XXX
CCB	1.00	1454			! ! ! ! !X!X! !
ICSA i	1.00	i 1458 i		i i i i i XIXI iXIXI i i i i i i XI	i i i iXiXi
ICSAB	1.00	1505			; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;
CRI	1.00	! 1514 !		i i i i i i i i i i i i i i i i i i i	! ! ! ! X!X!
PBS	1.00	1521		i i i i ixixi ixixi i i i i i i i i i i	i i i ixixi
LCSS	1.00	1525			
SL-04 !	1.00	<u>! 1535 !</u>		i i i i iXiXi iXiXi i i i i i i iXi	i i i i i XIXI
SL-6/7	1.00	1544			
SL-08 !	1.00	1550 !			
SL-08L i	5.00	i 1555 i		i i i i iXiXi iXiXi i i i i i iXi	i i i iXiXi
CCV	1.00	1600			
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PAGE 2 OF 2 FORM XIV - IN ILM02.0

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: <u>E0831-02</u>

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

ICP-1

Method:

Р

Start Date:

09/01/94

End Date:

09/01/94

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PAGE 1 OF 2

FORM XIV - IN

Lab Name: NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

ICP-1

Method:

<u>P____</u>

Start Date:

09/01/94

End Date:

09/01/94

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PAGE 2 OF 2

FORM XIV - IN

Lab Name: NEW ENGLAND TESTING LABORATORY Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: <u>E0831-02</u>

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

ICP-1

Method:

P___

Start Date:

09/09/94

End Date:

09/09/94

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PAGE 2 OF 2

FORM XIV - IN

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: <u>E0831-02</u> SAS No.: <u>SDG No.: NETL-18-1</u>

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/01/94 End Date: 09/01/94

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FORM XIV - IN

Lab Name:	NEW ENGLAND TESTING LABORATORY	Contract:	G & H RD/RA	
Lab Haille.	MEN ENGLAND TEOTING EXPONATION	Contract.	OUTTNEAM	

Lab Code: RI 010 Case No.: <u>E0831-02</u> SAS No.: <u>SDG No.: NETL-18-1</u>

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/02/94 End Date: 09/02/94

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FORM XIV - IN

Lab Name:

NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.:

SDG No.: NETL-18-1

Instrument ID Number:

FURNACE-1

Method:

Р___

Start Date:

09/07/94

End Date:

09/07/94

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PAGE 2 OF 2

FORM XIV - IN

Lab Name:	NEW ENGLAND TESTING LABORATORY	Contract:	G & H RD/RA	

 Lab Code:
 RI 010
 Case No.:
 E0831-02
 SAS No.:
 SDG No.:
 NETL-18-1

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/02/94 End Date: 09/02/94

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FORM XIV - IN ILM02.0

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL-18-1

Instrument ID Number: FURNACE-1 Method: F

Start Date: 09/06/94 End Date: 09/06/94

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FORM XIV - IN

Lab Name:

NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

COLEMAN-1

Method:

CV

Start Date:

09/21/94

End Date:

09/21/94

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FORM XIV - IN

Lab Name: NEW ENGLAND TESTING LABORATORY Contract: G & H RD/RA

Lab Code: RI 010 Case No.: <u>E0831-02</u> SAS No.: <u>SDG No.: NETL-18-1</u>

Instrument ID Number: COLEMAN-1 Method: CV

Start Date: 09/16/94 End Date: 09/16/94

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FORM XIV - IN

Lab Name:

NEW ENGLAND TESTING LABORATORY

Contract:

G & H RD/RA

Lab Code:

RI 010

Case No.: E0831-02

SAS No.:

SDG No.:

NETL-18-1

Instrument ID Number:

SPEC-1

Method:

F

Start Date:

09/07/94

End Date:

09/07/94

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FORM XIV - IN

C: QUARTERLY VERIFICATIONS

U.S. EPA - CLP 10 INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name:	New England Testing Laborator	v Contract: G & H RD/RA

Lab Code: RI 010 Case No.: E0831-02 SAS No.: SDG No.: NETL18-1

ICP ID Number:

ICP1

Date: 09/01/94

CV AA ID Number:

COLEMAN-1

Furnace AA ID Number:

FURNACE-1

				1	
Analyte	Wave- length (nm)	Back- ground	CRDL (ug/L)	IDL (ug/L)	М
Aluminum	308.22	1	200	38.0	P
Antimony	206.83	I	<u>i</u> 60	57.0	Р
Arsenic	193.00	BZ	10	2.0	F
Barium	455.40	1	200	1.0	Ρ
Beryllium	313.04	1	5	1.0	Р
Cadmium	226.50	1	5	4.0	Р
Calcium	317.93	İ	5000	8.0	Р
Chromium	267.72	i	10	3.0	Р
Cobalt	228.62	1	50	6.0	Р
Copper	324.75	i	1 25	4.0	Р
Iron	259.94	1	100	3.0	Р
!Lead	282.70	! BZ	! 3	1.0	F
Magnesium	285.21	i	5000	3.0	P
Manganese	257.61	1	15	1.0	Р
Mercury	253.70	!	! 0.2	0.2	CV
Nickel	231.60	i	40	10.0	Р
Potassium	766.49	1	5000	354.0	Р
Selenium	196.00	BZ	i 5	2.01	F
Silver	328.07	i	10	4.0	Р
Sodium	589.59	!	5000	98.0	Р
Thallium	276.40	i BZ	i 10	1.0	F
Vanadium	292.40	1	50	3.0	Ρ
Zinc	213.86		20	4.01	Р
L	1	1	1		

Comments:		
	_	

FORM X - IN

U.S. EPA - CLP 10 INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: New England Te	esting Laboratory	Contract:	G&H RD/RA	
Lab Code: RI 010	Case No.: <u>E0831-02</u>	SAS No.:		SDG No.: NETL18-1
ICP ID Number:	ICP1	Date:	08/26/94	-
CV AA ID Number:	COLEMAN-1			
Furnace AA ID Number:	FURNACE-1			

PAGE: 2

Analyte	Wave- length (nm)	Back- ground	CRDL (ug/L)	IDL (ug/L)	i M
Aluminum	<u> </u>	 	200		+
Antimony	1	i	i 60 i		$\overline{}$
Arsenic	1	1	10		
Barium	i	!	200		
Beryllium	1	i	i 5 i		$\overline{}$
Cadmium			5 ;		
Calcium		!	5000		<u> </u>
Chromium	i	i	10		
Cobalt	[1	50		\neg
Copper		l	25 1		<u> </u>
Iron	 	1	100		-
Lead	220.35	1	3	38.0	ļ P
Magnesium		i	i 5000 i		i
Manganese		1	15		
Mercury		ļ	! 0.2 !		1
Nickel		Ì	40		i
Potassium			5000		
Selenium		ı	5 1		i
Silver		1	10		1
Sodium		1	5000		ı
Thallium		i	i 10 i		ī
Vanadium	L	1	50		
Zinc		ı	l 20 l		ı

Comments:		

FORM X - IN

U.S. EPA - CLP 11A ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name:	New Engl	and Testing Laboratory	g Laboratory Contract: G&H RD/RA			
Lab Code:	RI010	Case No.: <u>E0831-02</u>	SAS No.:		SDG No.: <u>NETL-18-1</u>	
ICP ID Num	ber:	ICP-1	Date:	08/26/94		

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i I A m m lost m	length	Ι Ι Ι Ι Δ1		ent Correction Fa		
Analyte	(nm)	Al Al	Ca	Fe	Mg	_
Aluminum	308.22		1			1
Antimony	206.83		!	!		1
Arsenic		1				i I
Barium	455.40	1	i 1			!
Beryllium	313.04	1	i	i		i
Cadmium	226.50		l			
Calcium	317.93	i	!	!!		1
Chromium	267.72		1			i
Cobalt	228.62		I			l
Copper	324.75			l		Ī
Iron	259.94		1 1			; [
Lead	220.35		l 	l 		I
Magnesium		i	i	i		i
Manganese	257.61		1			
Mercury			j		·	1
Nickel	231.60		İ			1
Potassium	766.49			 		l 1
Selenium		i	İ	ı		i
Silver	328.07		1			İ
Sodium	589.59					
Thallium			i .			1
Vanadium	292.40		l			1
Zinc	213.86		!			!
						ì

Comments:			

U.S. EPA - CLP 11B ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name:	New Engla	and Testing Laboratory	_Contract:	G&H RD/RA	
Lab Code:	RI010	Case No.: <u>E0831-02</u>	_SAS No.:		SDG No.: NETL-18-1
ICP ID Num	ber:	ICP-1	Date:	08/26/94	

	Wave-				
1	length	Interelement Correction Factors for:			
!Analyte	(nm)				
[]	200.00				
Aluminum	308.22				
Antimony	206.83				
Arsenic	455.40				
Barium	455.40				
Beryllium	313.04				
Cadmium	226.50				
Calcium	317.93				
Chromium	267.72				
Cobalt	228.62				
Copper	324.75				
iron	259.94				
!Lead	220.35				
iMagnesium i	285.21				
Manganese	257.61				
Mercury					
Nickel	231.60				
Potassium	766.49				
Selenium					
Silver	328.07				
Sodium	589.59				
Thallium					
Vanadium	292.40				
Zinc	213.86	1 1 1 1			
1					

Comments:		

U.S. EPA - CLP 12 ICP LINEAR RANGES (QUARTERLY)

Lab Name:	NEW ENGLAND TESTING LABORATORY	Contract: G&H RD/RA		
Lab Code:	RI 010 Case No.: <u>E0831-02</u>	SAS No.:	SDG No.: <u>NETL18-1</u>	
ICP ID Numb	per: ICP-1	Date: 08/29/94		

	, .		
Analyte	Integ. Time (Sec.)	Concentration (ug/L)	м
Aluminum	3.00i	1000000.0	
Antimony	3.00	50000.0	ը
Arsenic	1		
Barium	3.00i	50000.0	
Beryllium	3.00	50000.0	
Cadmium	3.00	50000.0	
Calcium	3.00	2500000.0	
Chromium	3.00	50000.0	Р
Cobalt	3.00i	50000.0	
Copper	3.00	50000.0	
Iron	3.00!	500000.0	
Lead	3.00	50000.0	Р
Magnesium	3.00	1000000.0	
Manganese	3.00	50000.0	Р
Mercury	i		
Nickel	3.00	50000.0	
Potassium	3.00i	2500000.0	Р
Selenium			
Silver	3.00	5000.0	
Sodium	3.00	1000000.0	Р
Thallium			
Vanadium	3.00	50000.0	
Zinc	3.00	50000.0	Р
<u> </u>	<u></u>		

Comments:				
	 		 	

FORM XII - IN